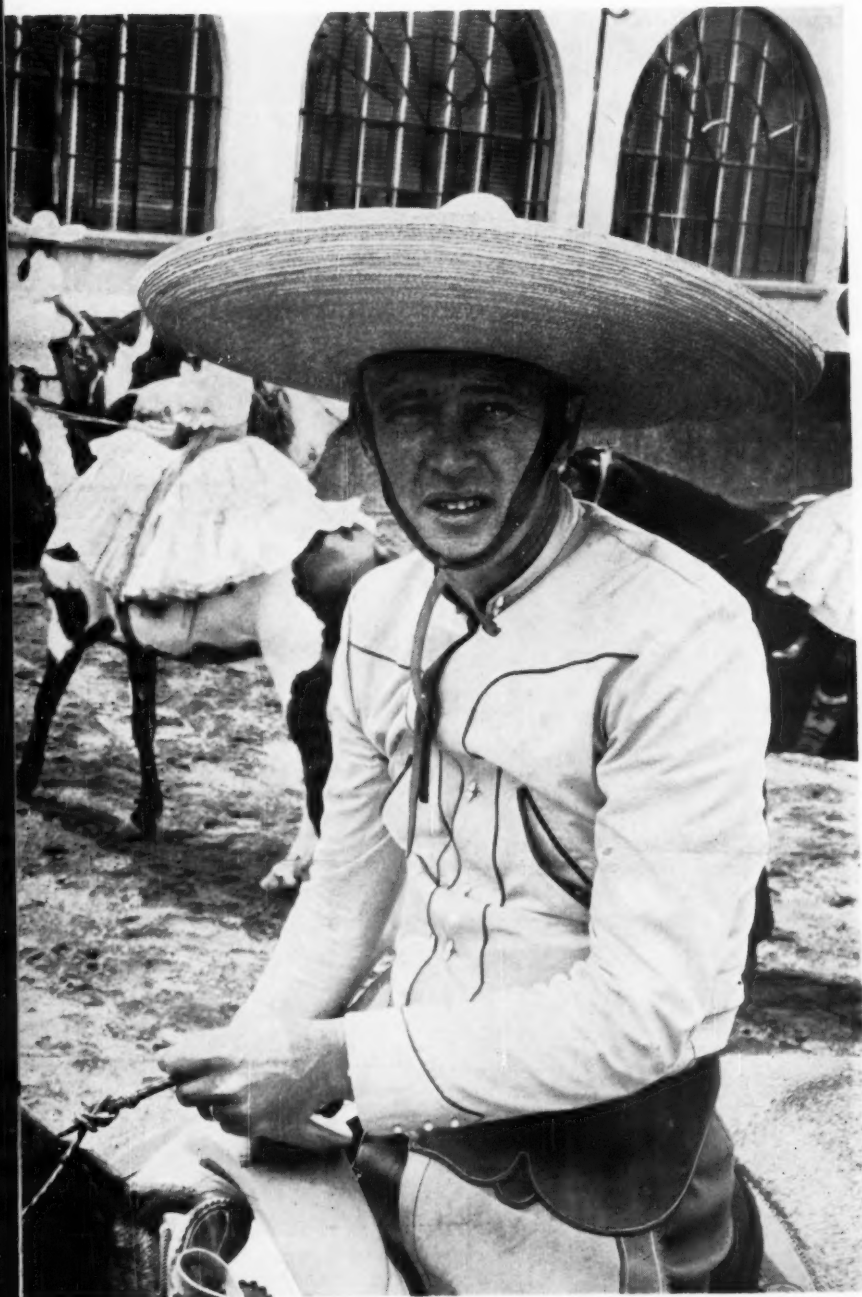


AUGUST 20, 1960

# Chemical Week

A MCGRAW-HILL PUBLICATION PRICE FIFTY CENTS



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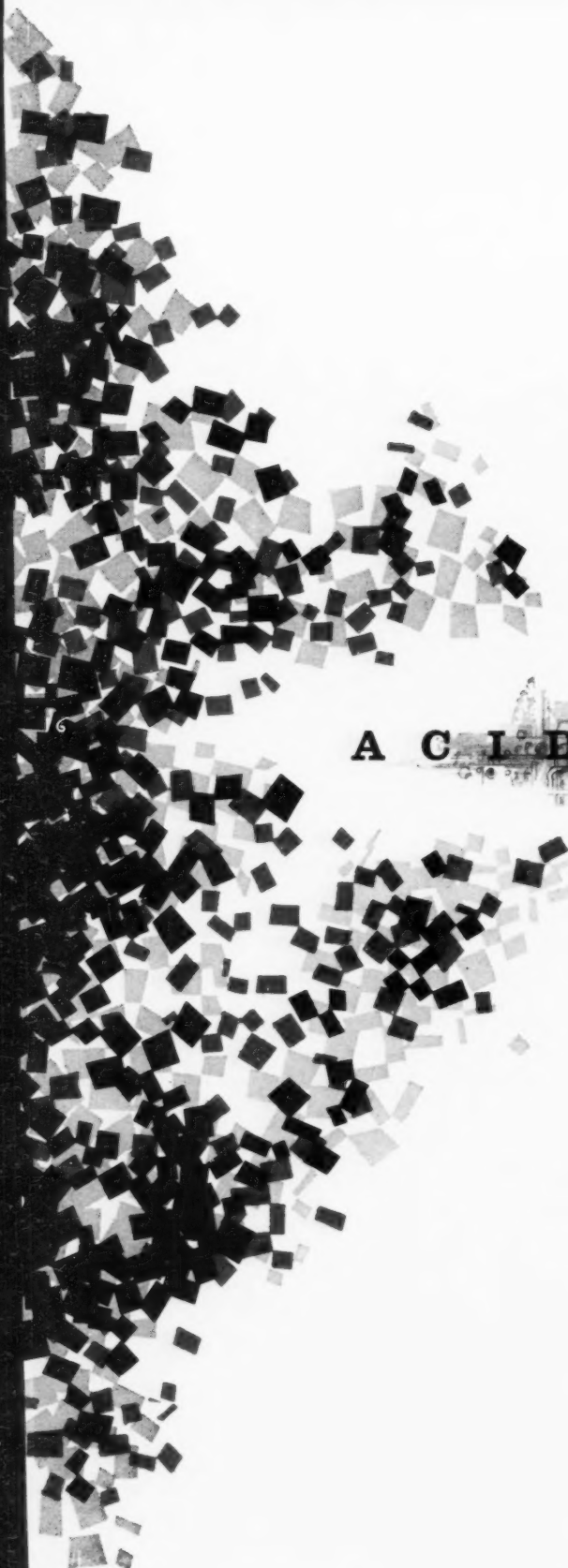
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**Diamond Alkali's Knoblock, CPI Manager**

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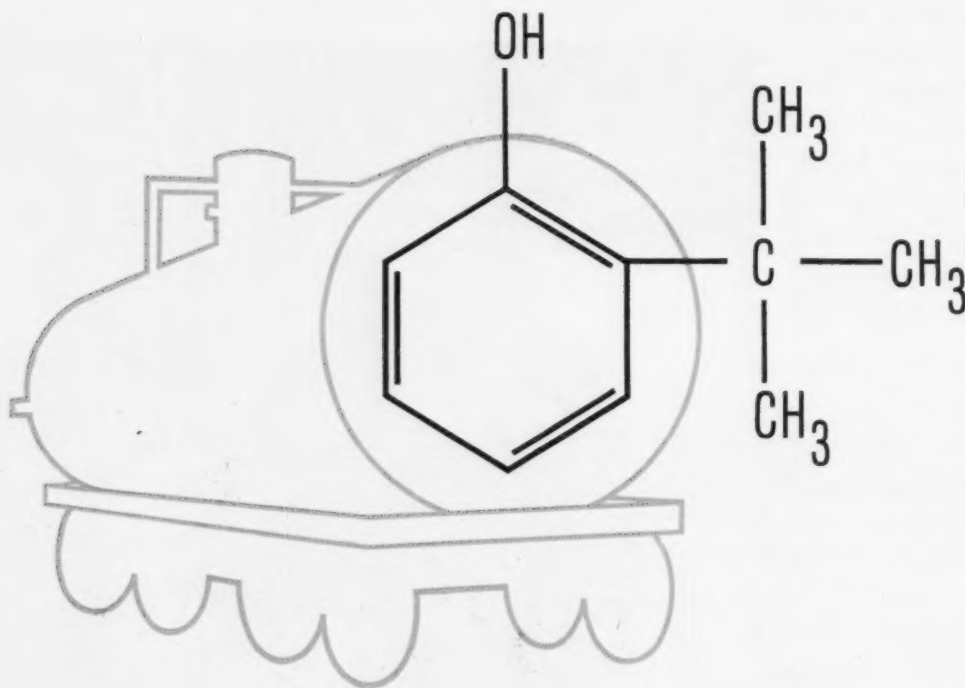
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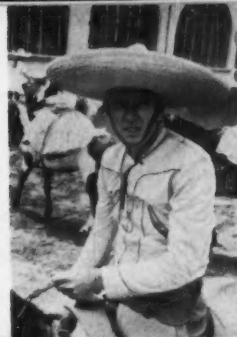
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**ON THE COVER:** Bruce Knoblock, manager of Diamond Alkali's Mexico operations, carries his love of Mexican life into the bullring as a member of "cowboy club," Asociacion Nacional de Charros, which perpetuates ranch tradition.



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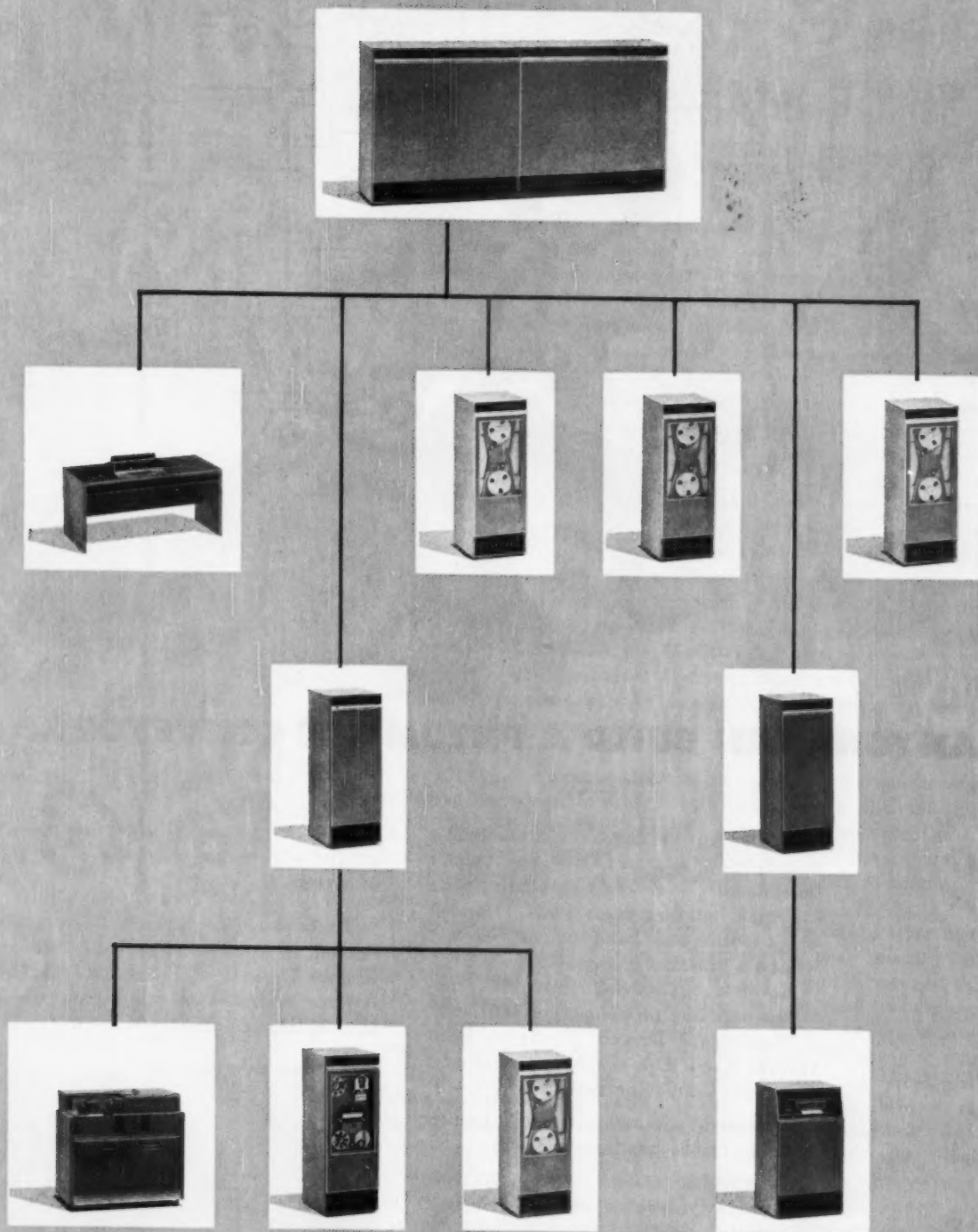
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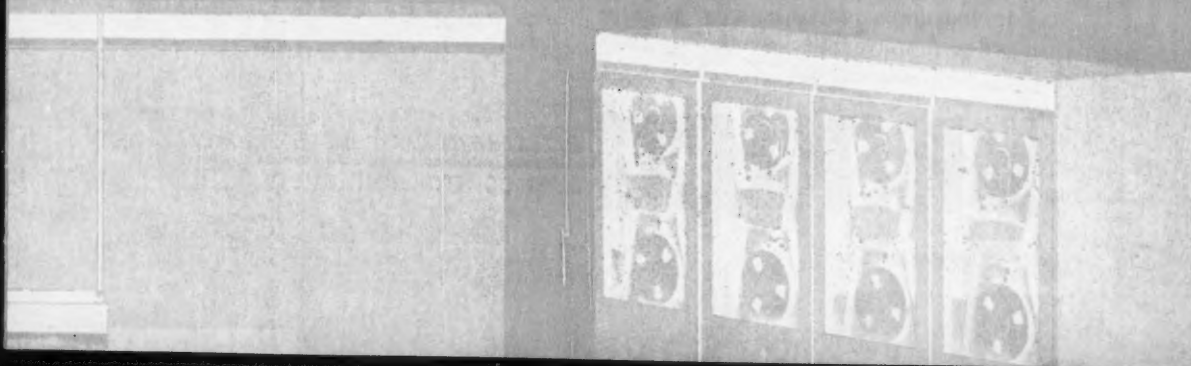
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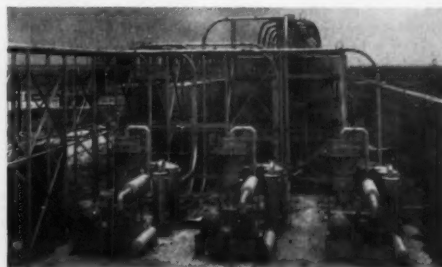
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## Less for Research, More for PR?

IT'S ENLIGHTENING TO SEE OURSELVES as others see us. The chemical industry, by that token, can learn a lot by listening to its customers—and they're not all happy.

Chemical concerns turning out additives for the confectionery industry, for example, should switch dollars from research and development to a public education fund. So stated Paul A. Sartoretto of the W. A. Cleary Corp. in a *CW* interview at the 77th Convention & Annual Confectionery Industries Exposition in Philadelphia recently.

The New Brunswick, N.J., manufacturing chemist complained that public apathy was resulting in the ban of "entirely pure and wholesome" additives for use in candies, ice cream, and similar edible products.

New products coming out of chemical industry R&D labs are running into a log jam caused by shortsighted legislation and administrative decisions by federal officers, he said. "What good does it do to turn out new stabilizers, preservatives, or emulsifiers when you have to spend too much time, effort, and money getting them approved by the FDA?" he asked. "You've got to prove that additives and other products used with candy production are not only harmless but even nourishing. Even when you prove it, FDA approval doesn't always come right away. The burden of proof, of course, is on the producer.

"Sometimes it's harder to get FDA approval than it is to develop the additive." Naturally, added Sartoretto, some small firms would rather dump research completely than go broke conducting extremely costly tests. Most companies, though, will merely reduce their research efforts, he said.

"What we need is a public education program to overcome the apathy and lack of knowledge the public has of the problems of the candy industry. The candy people don't have the money to do this alone. Chemical industry businessmen could help by spending a little less on turning out new additives and spend a little more on a campaign to inform the public."

He complained that Cleary had developed a product for slime control in paper mills that is perfectly harmless to human beings. "But they can't use it," he added, "because we can't seem to convince the FDA that papers made in these mills for wrapping food products are safe." One newsprint mill says it cannot use such a product because newspapers made from their newsprint may be used for wrapping fish.

"Maybe a public education campaign could get the candy people and additive companies an even break," he said. "Maybe it would result in a 50-50 share in trying to prove a new food additive good or bad." And it might speed up federal administrative decisions, he thought. "The way it is now, it's so costly to prove a new product is harmless that many aren't even reaching this stage."

We don't believe that public education, in its broadest sense, is the entire answer. It's emotion, not reason, that moves people to write their congressmen. The health-food faddists, the organic farmers and their ilk will bombard their representatives; but who of the general public, out of sheer reasonableness, will defend the safe, sane and beneficial use of additives? The answer lies, it seems to us, in educating the lawmakers themselves. An educational program can then, in turn, persuade the public that their representatives are acting in support of the general welfare.

In any case, Sartoretto has underscored the inconvenient fact that the supplier, i.e., the chemical maker, and not the customer must bear the burden—and that includes the expense—of proof.





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## LETTERS

### Drug Prices Less Taxes

TO THE EDITOR: Permit me to congratulate you on your editorial (July 23, p. 7) with reference to armed forces' purchases of drugs from foreign suppliers. Certainly the question as to whether such practices are conducive to national security and welfare are pertinent, should be raised, and discussed in full. Both the labor and government-imposed restrictions under which the drug industry works and the much-questioned pricing policies of the industry have a bearing on this, as you pointed out.

It seems to me, however, that a very important point has been overlooked, not only in this case but also possibly in every case where government agencies have purchased abroad under the Armed Forces Procurement Act. Since the vast majority of domestic suppliers are corporations, they pay considerable taxes, not only through the income taxes of their owners and employees but also as legal persons themselves. Therefore, in awarding any such contracts, it appears reasonable that the General Accounting Office, or other proper agency, first establish the net cost of the domestic goods, i.e., purchase price less taxes returned to the U.S. government.

If this is done, I feel sure that, while foreign suppliers may still be able to underbid domestic firms, the price differences will become much smaller, and actually in many cases show the domestic company as the low-bidder-in-fact.

WILLIAM H. SACHS  
Consultant  
Atlanta, Ga.

### Tetraiodide Booster

TO THE EDITOR: I read with a great deal of interest the article "Chemical Processes Lead Race for Cheaper Hyperpure Silicon" (July 16, p. 64). It was an excellent job.

I noticed in particular the statement (p. 65) that the lack of popularity of the iodide process "is probably due to its low stoichiometric yield: about 19 lbs. of intermediate product required for each pound of silicon." This figure is correct because of the high molecular weight of the tetraiodide, 563. However, it is also true that a

pound-mole of tetraiodide vapor, containing 28 lbs. of silicon, occupies the same volume at any given temperature and pressure as a pound-mole of any of the other tetrahalides containing the same amount of silicon; and that, except for the heat of fusion, the heat required to raise the temperature of this quantity of tetraiodide to any given value is not much greater than for the others. Furthermore, the tetraiodide needs no reducing agent and, finally, because of its high molecular weight and that of the liberated iodine, the gaseous reaction product can readily be compressed in centrifugal compressors from pressures as low as 1 mm. to those where both components can be condensed as liquids. . . .

A. C. LOONAM  
Consulting Engineer & Metallurgist  
New York

## MEETINGS

**Gordon Research Conferences** at Colby Junior College, New London, N.H.—Aug. 22-26, catalysis; Aug. 29-Sept. 2, cancer.

**Gordon Research Conferences** at New Hampton School, New Hampton, N.H.—Aug. 22-26, inorganic chemistry; Aug. 29-Sept. 2, adhesion.

**Gordon Research Conferences** at Kimball Union Academy, Meriden, N.H.—Aug. 22-26, infrared spectroscopy; Aug. 29-Sept. 2, high-temperature chemistry; kinetics of vaporization and condensation processes.

**Cryogenic Engineering Conference**, University of Colorado, Boulder, Colo., Aug. 22-24.

**Technical Assn. of the Pulp & Paper Industry**, alkaline pulping conference, Multnomah Hotel, Portland, Ore., Aug. 22-24.

**Joint Automatic Control Conference**, Massachusetts Institute of Technology, Cambridge, Mass., Sept. 7-9.

**American Chemical Society**, National meeting, New York, Sept. 11-16.

**Synthetic Organic Chemical Manufacturers Assn.**, meeting, Roosevelt Hotel, New York, Sept. 13.

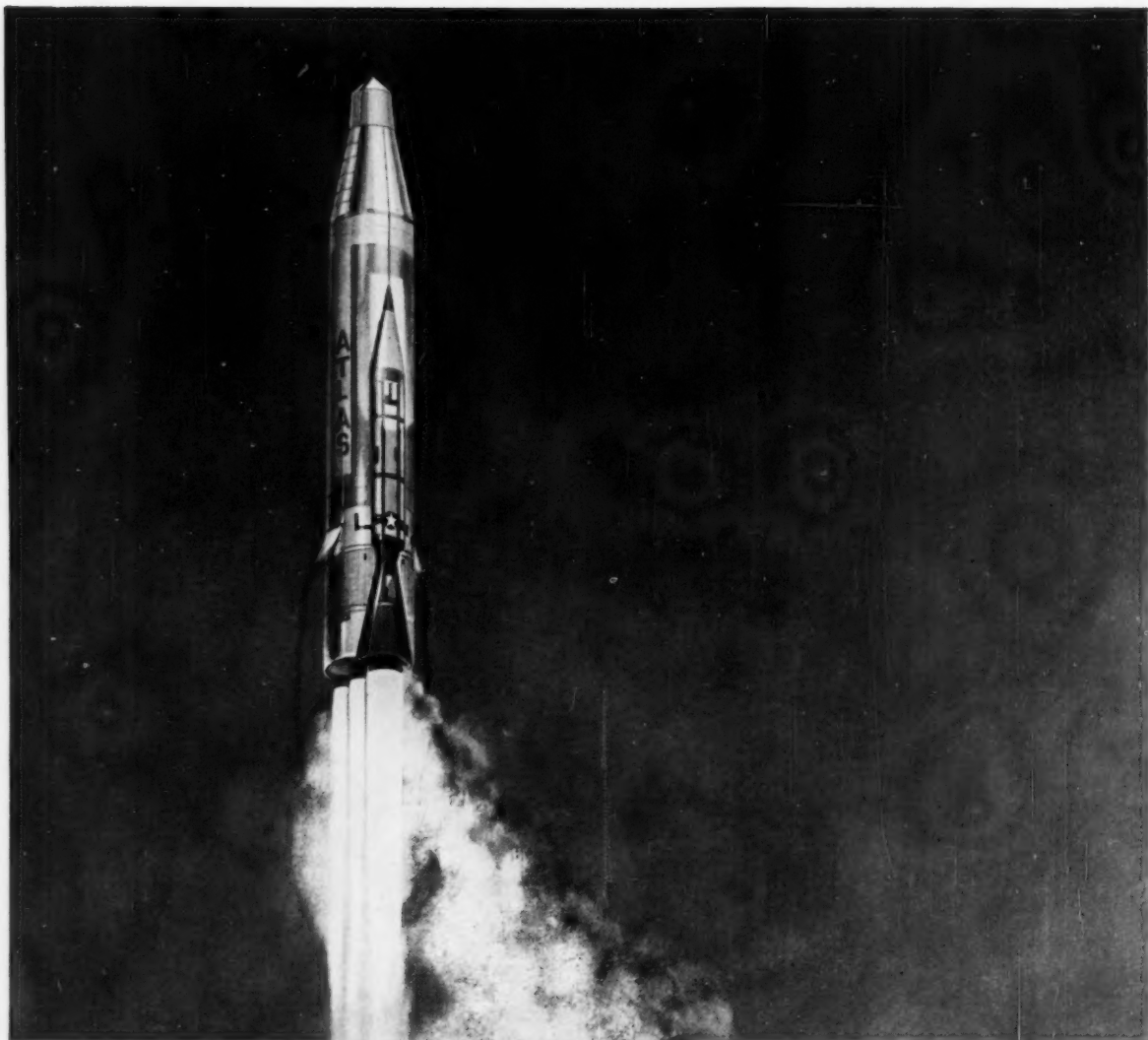
**Chemical Exposition U.S.A. 1960**, Sept. 13-15, Hotel Statler Hilton, New York. Exposition held concurrently with 138th national meeting of the American Chemical Society. Admission to exhibits free to industry representatives.

**Drug, Chemical & Allied Trades Assn.**, 70th annual meeting, Sagamore Hotel, Bolton Landing, Lake George, N.Y., Sept. 15-18.

**Chemical Market Research Assn.**; theme: "The European Chemical Industry"; Wentworth-by-the-Sea, Portsmouth, N.H., Sept. 22-23.







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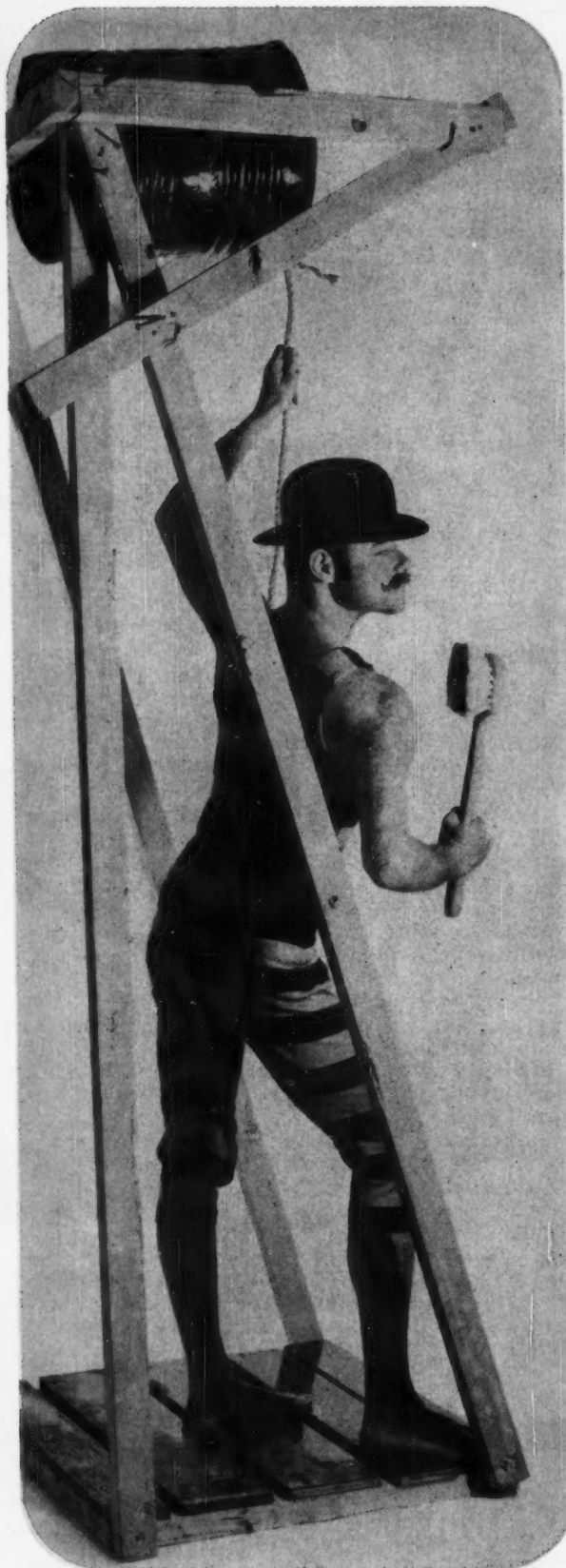


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August, 1960



This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

## PURECAL 0 USED TO PREPARE PIGMENT SLIPS OF HIGH-SOLIDS CONCENTRATION

For high-speed "on-the-machine" paper coating, Purecal® 0, Wyandotte's new agglomerate-free calcium carbonate, helps to prepare pigment slips of high-solids concentration and unusually low viscosity...by using Wyandotte's recommended procedure, these can be prepared either continuously or in a batch operation. Experiments in Wyandotte's new pilot plant for pigment dispersion indicate that Purecal 0 can be easily dispersed at 75% solids using a high speed-high shear agitator at a minimum capital investment, and low mixing cost. For example, in a batch operation, 500 pounds of Purecal 0 dispersed completely in a 55-gallon tank within 30 minutes.

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With an average particle size of 0.15 micron, Wyandotte's Purecal 0 appears to be effective in providing gloss and sheen without loss of opacity often common in smaller particle sizes.

## NEW THICKENING AGENT WON'T GUM OR RANCIDIFY

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At 100°F., the viscosity of pure Pluracol V-10 is approximately 45,000 centistokes. Aqueous solutions of this polyol exhibit Newtonian properties similar to those of petroleum oils. The viscosity of these solutions remains relatively constant, even though the rate of shear is increased.

Pluracol V-10 will not hydrolize, or form solid or waxy residues. It can be heated to 400°F. for long periods of time in the absence of air without appreciable decomposition.

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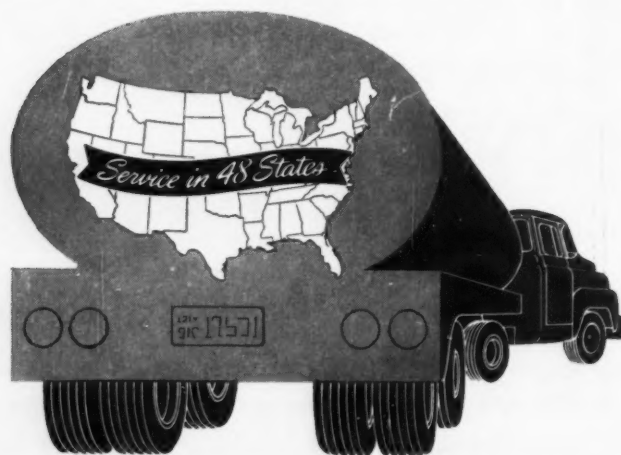
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## **Filters and their Fabric requirements**

Experienced engineers recognize that in filtration the varying requirements of pressure, vacuum and gravity filters necessarily affect the type of filter cloth to be used.

In pressure filtration, the slurry is forced through the filter medium under pressure, with the obvious implication that the filter fabric must have adequate mechanical strength and durability to withstand the force.

The plate and frame press, probably the most universally used, demands particularly tough fabrics. Because the filter chambers are formed by alternate plates and frames, the filter cloth must have adequate gasketing properties. Scraping off of the filter cake when the press is opened is a severe test of the filter cloth, and is a compelling reason for abrasion resistance.

Fabrics for recessed-plate pressure filters, in which intervening frames are not present, require exceptionally high flex and abrasion resistance because the cloth must be tightly bolted to angular plate surfaces.

Vacuum drum filters can generally employ lighter weight fabrics than pressure filters. Dimensional stability, however, is necessary to prevent cloth from pulling away from drum edges, or from ripping under the strain of shrinkage around the circumference.

While gravity filters use media of various types, cloth may often be the answer.

To get complete information about filter fabrics, make sure you consult a specialist. The specialists who distribute Wellington Sears filter fabrics are fully equipped to help you select the medium that best answers your problems. Behind them, they have our 114 years of experience in providing quality fabrics to industry. For distributors' names, and a handy information booklet, "Filter Fabric Facts," write Dept. M-8.



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# JEFFERSON CHEMICALS

# Business Newsletter

CHEMICAL WEEK

August 20, 1960

**Chemical management is veering toward more cautious policies,** although sales are booming (*see p. 25*) and despite the general expectation of a business upturn this fall when activity in the defense, steel and auto industries is likely to pick up.

Sales of chemicals and allied products—predicted to top \$27 billion this year (*CW, Dec. 26, '59, p. 64*) now appear likely to hit \$28 billion, or more. The six-month total computed by the U.S. Dept. of Commerce was \$14.17 billion—up nearly 14% over the industry total in first-half '59. This included a preliminary June figure of \$2.4 billion—10% higher than in June of last year.

But with overcapacity in some lines bearing down on profit margins, management is becoming a bit more tight-fisted. In the big dividend month of June, while most other industries were increasing their cash dividend payments, the chemical industry cut back slightly on its total dividend payout. However, in the entire first half of '60, chemical companies' cash dividends—as totaled by the Commerce Dept.—were up 5%, to \$493.4 million.

Another place to look for a more conservative attitude on the part of chemical management: some industry men are expecting a downward revision of capital spending estimates in the quarterly survey to be reported by the government next month.

•  
**An important executive switch in the CPI this week:** Osgood V. Tracy, formerly president of Esso Standard Division of Humble Oil & Refining, has been made a director and executive vice-president of W. R. Grace & Co. and will take charge of Grace's chemical business. Tracy will be responsible for the seven operating divisions as well as the research division comprising the Grace chemical group. It's the Grace post held by Marlin G. Geiger, who died last May.

•  
**Sunray Mid-Continent Oil is diving deeper** into petrochemical projects with establishment of a brand-new wholly owned subsidiary—Sunray Chemical Co. The new company will handle chemical and petrochemical research, manufacturing and sales, will be headquartered, as is the parent company, at Tulsa, Okla.

There are to be "no limits for activity and aggressive entry into all phases of the petrochemical business," R. W. McDowell, chairman of the Sunray Mid-Continent board, said this week. The company hopes to build or acquire additional facilities for "polyethylenes, polypropylenes and naphthalenes." (Sunray already produces intermediates including tetramer, benzene, toluene and other hydrocarbons.) To head the new Sunray Chemical: Glenn E. Wynn, former president of Suntime Refining (Corpus Christi, Tex.), where the 60-million-lbs./year styrene unit is slated to go up (*CW, July 30, p. 21*).

## **Business Newsletter**

(Continued)

Polyethylene production might be a bigger jump than Sunray Mid-Continent would care to take, if the intensifying scramble in that field is all the current situation indicates (*see p. 22*).

### **Late-breaking plant expansions in the South:**

- Signal Oil and Gas Co. will add a Hydeal unit to convert toluene into benzene at its Eastern States Refinery (Houston, Tex.). Planned output of 1,000 bbls./day of benzene will double Signal's present capacity at Houston to 21 million gal./year. The unit, to be built by Procon, will go onstream at year's end.

- American Cyanamid will double its capacity of wet-process phosphoric acid. A multimillion-dollar addition at the firm's Brewster, Fla., plant will boost the plant's total output potential to 400,000 tons/year of 54% phosphoric acid.

**With Cuba's seizure of the Moa Bay nickel and cobalt plant,** Freeport Sulphur, its parent company, loses the \$19 million it invested in the project and in the refinery at Port Nickel, La., which can handle only the Moa Bay ore. The rest of the investment—about \$87 million—was financed by loans from banks, automobile and steel companies, on which Freeport cannot be held liable.

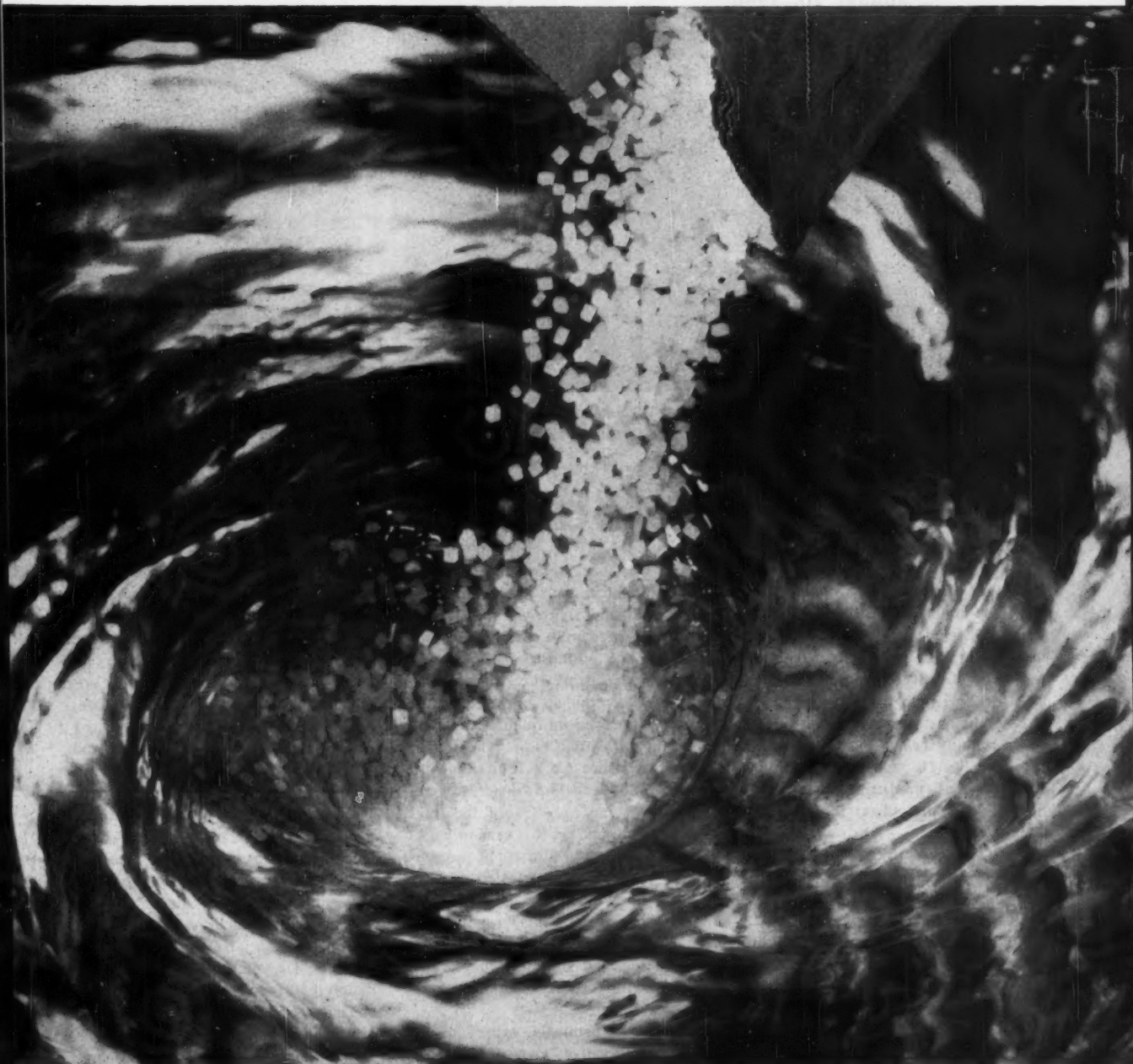
Almost all other U.S. investments in Cuba have now been taken over. The major exception is the U.S. government's Nicaro nickel plant. Small plants owned by Du Pont, Firestone, Goodyear and Goodrich have also escaped seizure so far.

**Prospects for mending the European trade split** have brightened considerably over the last fortnight as a result of West German Chancellor Konrad Adenauer's separate meeting with President Charles de Gaulle and Prime Minister Harold Macmillan. Adenauer, convinced that Western Europe must remain politically united in the face of expected aggressive moves by Russia, has come around to the British view that an economic split between the Common Market and the European Free Trade Assn. would endanger that unity.

With Macmillan he decided to work out the problem of uniting the two groups with leaders of the member countries, trying to arrive at a basis for action in time for the Oct. 21 meeting of the trade committee of the new Organization for Economic Cooperation and Development. And with General de Gaulle he agreed to confine the powers of the Common Market to the economic sphere and to work out joint political policy through some kind of confederation of nations. This would make it easier for Britain and its "Outer Seven" partners to join the Common Market. In the past few weeks the British had been saying it might take three or four years to hammer out a Six-Seven linkup. Now they think a solution may be found within the next 18 months.



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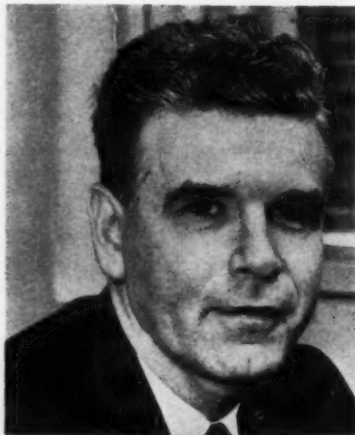
National Distribution • Warehousing in Principal Cities

# Chemical Week

August 20, 1960



Carbide's Benedito: Sales job grows as 'world's biggest plant' goes up.



Celanese's Taylor: Putting new drive in firm's resin-converting business.



Rexall's Knight: His engineering zeal may result in 'extra-capacity' plant.

## PE Makers Bank on Price Cut to

Target of last week's polyethylene price cut (bringing PE resin prices down as much as 5¢/lb.): a fourth-quarter sales spurt, which will help use the large new capacity becoming available. General-purpose PE now sells for 27½¢/lb.

Polyethylene prices have come down steadily (*chart, p. 23*). And as far back as 10 years ago, industry experts were predicting that price ultimately would drop into the 20-30¢/lb. bracket — and would stay there. (The new price doesn't affect high-density resins, stable at 35¢/lb. for some time, and now expected to double sales in '60.)

But this year the slowdown in growth of the conventional product to a 12-15%/year rate (in the face of millions of pounds a year additional capacity on the way) merely hastened what was in the cards from the beginning. Industry readily admits that it's been some months since polyethylene for nonspecial uses was actually selling at list price, anyway.

The Union Carbide-initiated price drop, quickly accepted on an industry-wide basis, will see at least two areas of conventional polyethylene sales picking up this year: packaging, and paper coatings. And it's certain that, even at the lower price, there will be a step-up in polyethylene mar-

keting activity among all producers.

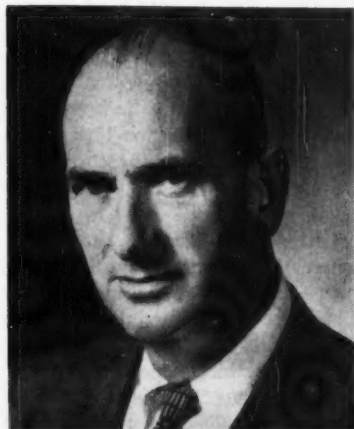
One application in which polyethylene could now score big gains: polyethylene-coated milk cartons. According to U.S. Industrial Chemicals' Vincent McCarthy, director of plastic sales, polyethylene in milk cartons, already approved on quality, can now come in on a price basis. And Union Carbide Plastics Co.'s John Benedito says polyethylene film — already expected to wrap up 33% of the total polyethylene market this year in packaging and sheeting film applications — at its new price is expected to find a host of new meat and produce wrap applications, beat a bigger path into the overwrap field, attain new uses in shipping and multiwall bags, and find growing construction and agricultural uses.

Spencer Chemical, expressing a more conservative view than some over widening polyethylene markets, sees three major growth areas for low- and medium-density resins: sales of film, Spencer predicts, will move from 355 million lbs. in '60 to 550 million in '65; extrusion coatings, from 72 million lbs. in '60 to 120 million by '65; and wire and cable insulation, up from 120 million lbs. this year to 175 million in five years.

Although automatic polyethylene packaging machinery is still some-

what of a poser, there have been recent breakthroughs here. These, according to McCarthy, now make a 235-million-lbs./year polyethylene packaging market practically a certainty by '65. And there are still untapped markets in housewares, toys, pipe, and wire insulation—all expected to begin picking up as planned and new plants continue to come onstream.

Moving into second place—next to Union Carbide—in polyethylene capacity this month: U.S. Industrial Chemicals. This division of National Distillers is just starting up a second 100-million-lbs./year unit at its Houston, Tex., facilities. In addition, it operates a 100-million-lbs./year plant at Tuscola, Ill. Of its approximately 300-million-lbs./year current capacity, USI says much of its resins are in the new, lower price range. Such additional capacity, most companies say, is justified. Like carbon black and synthetic rubber producers, the polyethylene companies hold that capacities well above normal demand must be maintained to meet specific customer needs. For instance, within the past few months, USI has introduced the following: a new packaging resin, a new paper coating resin, three new blow-molding resins, a new cast-film formulation, and two high-flow blending resins.



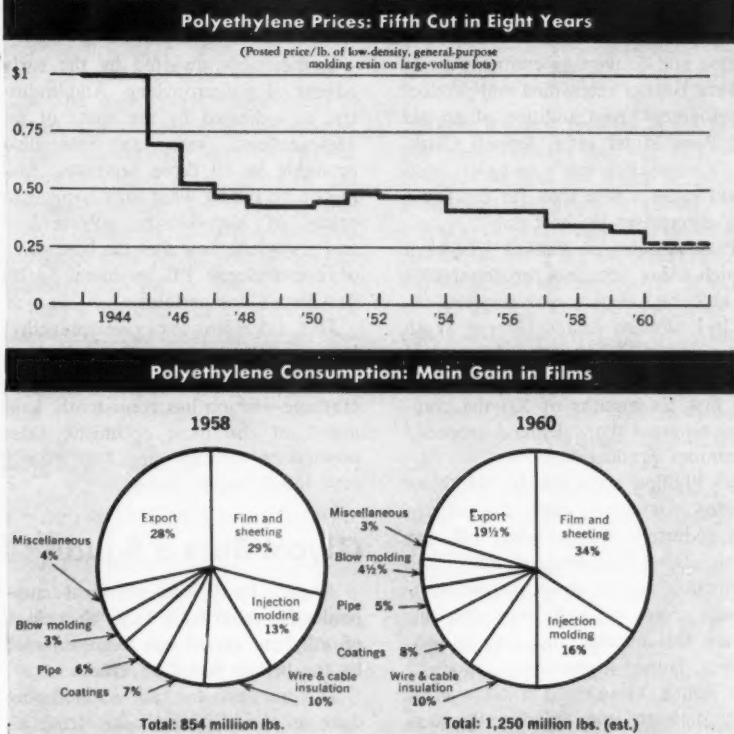
USI's McCarthy: Hopeful on selling more polyethylene as coating film.

## Spur Sales

**Other Plants Going Up:** Carbide, the No. 1 U.S. polyethylene producer, is starting to build a 110-million-lbs./year plant in Puerto Rico (*CW Business Newsletter*, June 11). Tabbed "the world's largest," it's expected onstream in '62. Although this plant is officially slated for marketing mainly outside the U.S., the industry feels that it might as well be counted in with U.S. mainland capacity now being built. Much of its output, specialists predict, ultimately will end up here. Other recent UC moves: a few months back it reported plans to add 170 million lbs./year to its two Texas facilities; and an 80-million-lbs./year plant at Whiting, Ind., came onstream last year. Total UC capacity: more than 600 million lbs. of high-pressure polyethylene, about 55 million lbs. of high-density, low-pressure resins.

Other plants with at least 200-million-lbs./year announced polyethylene capacity: Du Pont—more than 300 million (including the high-density plant at Orange, Tex., coming in commercially late this quarter); and Dow—about 230 million.

The two latest companies to see polyethylene as too good an opportunity to let pass: Foster Grant (Leominster, Mass.) and Rexall Drug and Chemical (Los Angeles). Rexall is



joining with El Paso Natural Gas in a 50-50 polyolefin venture that will probably range from conventional polyethylene to polypropylene and copolymers. Foster Grant will utilize Scientific Design's "package plant deal" (such as SD initiated successfully for PVC and phthalic anhydride). Industry feels that some smaller chemical producers will be intrigued by the package deal. But it's Du Pont's hunch that a 12-15-million-lbs./year plant won't work out economically. Some say, too, that the product's not quite up with that of the ICI process. Others hold that newcomers could upset an already delicate industry balance. But the SD package plant isn't expected by any of the major producers to become a "significant trend" in the U.S.

Foster Grant, already in polystyrene, acrylonitrile-styrene copolymers, and nylon 6, also is considered "predictable" in the plastic field, with a knowledge of its workings from end-product to raw materials. But entrance of Rexall—with at least 150-million-lbs./year resin capacity sometime in '62—is causing more marked concern.

Ralph Knight, who will head Rexall's big polyolefin operation, is a former crack USI engineer; he's not a marketing man. And it's held that

his engineering enthusiasm could result in a finished plant with more than just the announced capacity.

Based on Rexall's present captive consumption rate of plastics—about 60 million lbs./year — this would leave a lot of polyethylene for sale. One sales pact that's sure to change: that of Rexall's Tupperware Division, which reportedly has been buying substantial quantities of its resin from Union Carbide. When the Rexall plant comes in, Union Carbide will be looking for a new customer.

**The Lid's Off Low-Pressure:** This year, for the first time, total polyethylene volume is getting a substantial boost from low-pressure, high-density resin. Sales of this material, which were about 70 million lbs. in '58, took off last year with the blow-molded bottle boom, and are now predicted to reach nearly 170 million lbs. this year, could conceivable double again in '61, according to Celanese predictions. Bottles alone are now slated to hit 250 million lbs. by '65, with Hercules a major factor here.

Recently cast in new roles at Celanese (one of the companies in on the bottle boom) are William Orr, new president of Celanese Polymer Co., and Dave Taylor, president of Celanese Plastics Co. Formation in recent months of a separate polymer pro-



ducing and converting company point toward further intensified end-product development. And addition of an old Du Pont Mylar man, Russell Clark, to Celanese Polymer's technical staff could mean a new look for the firm's film enterprises in the future.

Plastics sales at Phillips Chemical (which today accounts for about 20% of U.S. high-density polyethylene capacity) remains under George Wash and a group of key men who pushed its first batch of Marlex resins. In the first six months of '60 the company reported that "demand exceeded maximum production."

It's Phillips' guess that by '63 "blow molded containers, toys, housewares and industrial components will use about 220-million-lbs. of PE." The company's now in low- and medium-density resins as well. And due on-stream this quarter and already producing some high-density product: Du Pont's Orange, Tex., low-pressure polyethylene plant. Spencer, which recently expanded its Orange, Tex., works to 120 million lbs./year of low- and medium-density resins, has moved two new vice-presidents into plastics: Harold Dinghes, in charge of plastics sales, and E. V. Friedrich, who will have responsibility for overall direction of the Plastics Division's activities. Frank Pyle, formerly vice-president of sales, is now assistant to the president.

These are but a few examples of what Spencer calls giving "maximum executive emphasis on development and sales of plastics products."

**High Optimism for High Density:** An application in which Grace has high optimism for its low-pressure product: wire and cable covering. But if high-density poly makes a bid for "80% of this market"—which Grace feels it could obtain, it would have to make heavy inroads into conventional polyethylene—wire and cable cover was an outlet for 102 million lbs. of conventional polyethylene in '59. And both pipe and automobile industry applications Grace holds as big potential outlets.

Hercules—which can push either its high-density polyethylene or polypropylene at its Parlin, N. J., facilities—may be in an enviable position as converters weigh two products destined to overlap considerably in application. It's thought that high-density's potential—though substantial

—is inevitably dwarfed by the early advent of polypropylene. And industry, as indicated by the spate of reorganizations, sees an intensified scramble in all three products. And there's no telling what may happen to prices of high-density polyethylene and propylene now that the base price of conventional PE is down 5¢/lb. But there's one certainty:

The 1.5-billion-lbs./year polyethylene capacity today will be at least 2.4 billion lbs. by '62. Thus polyethylene—which has consistently kept ahead of the most optimistic sales predictions—would appear to have a very tough battle ahead.

## Glycol Stirs a Squall

**A plea by British chemical companies for relief from U.S. "dumping" of ethylene glycol has been rejected by the British Board of Trade.**

The request for an antidumping duty on the chemical came from all three British producers—Imperial Chemical Industries, Shell, and Union Carbide. Although the board doesn't make its cases public, gist of the complaint is understood to have been that ethylene glycol (supplied chiefly by Dow and Jefferson Chemical) was being sold in Britain at prices below U.S. domestic prices, that it had already had a depressing effect on the British market, and that, if continued, it would result in underemployment of British capital.

**No Comment:** The board, following its usual practice, did not comment on its decision, beyond stating that the case for a special duty had not been proved.

Under British law, two things must be proved if such a duty is to be imposed: (1) dumping (defined as export of goods to the U.K. at a price below the fair market price in the country of export); (2) "material injury" to the domestic industry.

The board is usually reluctant to move without a solid case on both counts. The feeling in the British industry about the case is that technical dumping was proved, but injury wasn't bad enough to warrant roiling Anglo-American waters.

U.S. glycol is said to have been sold in Britain for \$313.60/long ton or lower, c.i.f., with the 33½% duty and merchant's commission paid. British industry sources calculate that to

be about 9.6¢/lb. f.a.s. U.S. East Coast port. By comparison, the U.S. quoted price for ethylene glycol delivered on the East Coast in tanks is 13.5¢/lb.

In the last year the bulk price of British glycol dropped from \$392/- long ton to \$327.60—about 14.8¢/lb. delivered. While industry men admit the price was too high a year ago, they argue that the current tab doesn't yield a fair return on investment.

The glycol situation is a good example of what British industry spokesmen—such as ICI's chairman, Stanley Chambers—mean when they complain that exports that are "chicken feed" for U.S. producers can disrupt European markets (*CW*, July 16, p. 34). Only about 1,000 tons of U.S. glycol came into Britain last year—a negligible amount in the U.S. industry, but about 5% of the total captive market in the U.K.

## New Entry in Oxygen

**There's a new factor in the oxygen plant business this week: Dravo Corp. (Pittsburgh)—armed with know-how and sales rights licensed from West Germany's Linde AG. (Munich)—is out to get contracts for design and construction of air-separation plants throughout the U.S., Canada and Mexico.**

Dravo will handle North American business in Linde-Fraenkl air separation plants on an exclusive basis; and it will be out for business in building other Linde-Fraenkl gas plants—such as acetylene—on a nonexclusive basis.

Last week Dravo nailed down its first contract under its Linde AG. agreement—an assignment to put up an oxygen and nitrogen plant for Ford Motor's steel works at Dearborn, Mich. Daily capacity: 280 tons of gaseous oxygen, 10 tons of liquid oxygen, and 1.4 tons of liquid nitrogen, all of 99.5% purity.

This, of course, is only a modest-size plant. But winning the contract is still a bright feather in Dravo's cap because it represents a triumph over an established competitor already operating at the Dearborn site. Air Products (Allentown, Pa.)—with a smaller on-site plant—has been supplying oxygen to the Ford steel mill under a contract running to early '61. Ford—which has been expanding its steel production capacity, and hence needs

a larger oxygen plant—expects to work out a continuation of that arrangement until the new plant is completed in Dec. '61.

The fact that Ford is switching suppliers indicates that Dravo will be an aggressive bidder for this kind of business. Considerations that may have a bearing on the change:

- The new oxygen-nitrogen plant will be owned and operated by Ford, whereas the present plant is owned and operated by Air Products (which

also designed and built it).

- The new plant, according to Dravo, will be notably economical. A Dravo spokesman says a Linde-Fraenkl process plant is "safe and extremely simple to operate"; and power consumption—which accounts for about 50% of the cost of producing oxygen—"will be low."

Ford's management appears to be convinced. Ford chose the system "because operating costs are low and the products are 99.5% pure."

## Sales Boom—but Margins Dip

**Booming sales of chemicals, plastics, and nonferrous metals give latest midyear financial statements a strongly bullish tone—but they don't quite mask out the downward trend in rates of return.**

Dow Chemical, for example, in its fiscal year ended last May 31, continued the upsurge it started in mid-'58 (table, below). But even though Dow scored an enviable 10.5% on full-year profitability (after-tax net income divided by net sales), its profit margin for the spring quarter dipped from 10.9% in '59 to 10.3% this year.

Dow's product mix was virtually unchanged from last year. Chemicals again accounted for 51% of sales volume; plastics, up from 35 to 36%; magnesium, down from 8 to 7%; agricultural chemicals, unchanged at 6%.

Again Dow achieved a significant increase in its foreign business. In '53-'54 sales of Dow's export subsidiaries amounted to about \$25 million, 6% of the company's total. In the year just completed, this business

was up to 11% of the much larger total.

Three broadly diversified companies report that their chemical operations have been relatively more successful than most of their other divisions. President W. N. Hall of Dominion Tar & Chemical says his chemical and paper divisions both scored marked sales increases in the first half, but that there was a fall-off in sales of building materials.

"Earnings of the Frontier Chemical Co. division are substantially ahead of those for the comparable periods of '59, although less than our expectations," says Chairman Charles Ireland of Vulcan Materials Co. He expects Frontier's performance during the full year to be "satisfactory."

General Mills says its Chemical Division had a "good year" in the company's fiscal year ended May 31. There was "continued progress in the acceptance of its specialty organic chemicals." New facilities for more economical production were installed.

## Planning More Potash

**Three big new projects in the news this week indicate that the U.S. will continue to lead the world in potash production for years to come:**

- Texas Gulf Sulphur is now considering building a \$20-30-million potash mine and refinery with capacity of up to 12,000 tons/day in south-east Utah. This is much larger than the proposed plant Texas Gulf had in mind when it took an option to buy the Cane Creek and Seven Mile Anticline deposits from Delhi-Taylor Oil.

- Southwest Potash Corp.—a division of American Metal Climax—will put nearly \$3 million into expansion of its facilities near Carlsbad, N.M. The mine and mill there went into production in '52, and their capacity was increased in '55.

- Bonneville Ltd.—producer of potash by solar evaporation—has awarded a contract to Gibbons and Reed Co. (Salt Lake City) for dredging of a new, 4,300-acre evaporation pond at Wendover, Utah.

Vice-President C. F. Fogarty of Texas Gulf says his company is weighing three alternate plant schemes, with capacities of 4,000, 8,000 or 12,000 tons/day. Colorado School of Mines has been engaged to complete beneficiation studies; the railroads have granted freight-rate equalization, based on Carlsbad rates, for shipment from Utah into the Southeastern and Midwestern states; and Utah Gov. George Clyde has been asked to endorse the company's petition to the U.S. government for immediate withdrawal of the potash lands from oil and gas development.

In Salt Lake City last week, Fogarty left the impression that he will recommend to his board of directors that the company go ahead with the purchase of the lands and construction of production facilities if the oil and gas problem can be resolved. He explained that oil and gas drilling and production are considered inimical to underground mining of potash; he feels that petroleum operations would be a safety hazard for potash mining workers and cause property damage.

Southwest Potash says its additional production capacity "is required to keep pace with expanding sales," and "will also provide for further improvement of the muriate product."

COMPANIES	SALES			EARNINGS		
	1st half 1960*	Change from 1st half '59		1st half 1960*	Change from 1st half '59	
Aluminium Ltd.	\$255.8	Up	20.9%	\$21.8	Up	106.4%
Beryllium Corp.	11.7	Up	8.9%	0.8	Down	6.8%
Brush Beryllium	13.7	Up	49.6%	1.1	Up	43.0%
Devoe & Raynolds	33.5	Up	9.4%	1.2	Up	14.2%
Dominion Tar & Chem.	103.0	Down	0.3%	3.3	Down	26.4%
Dow Chemical <sup>(1)</sup>	781.4	Up	10.8%	82.4	Up	31.0%
Houdry Process	—	—	—	0.4	Up	61.9%
Int'l. Nickel	268.8	Up	26.5%	43.9	Up	14.4%
Lestoil Products	10.7	Down	8.7%	0.7	Up	10.5%
Pacific Veg. Oil	—	—	—	0.3	Down	38.2%
Schering Corp.	42.6	Up	9.3%	4.0	Down	23.5%
United Carbon	29.5	Down	6.0%	3.6	Up	3.7%
Universal Oil Products <sup>(2)</sup>	29.9	—	—	0.8	—	—
Virginia-Carolina Chem. <sup>(3)</sup>	86.8	Up	6.6%	2.1 <sup>(4)</sup>	—	—
Vitro Corp.	30.5	Up	10.3%	0.5	Up	102.3%

\* All dollar figures in millions. (1) For fiscal year ended May 31. (2) Comparative figures for first-half '59 not reported. (3) For fiscal year ended June 30. (4) Pre-tax net income up 4.6%; after-tax net income up 55.8% because of substantial saving on income tax, stemming from transfer of phosphate ore tract to trustee for company's employee retirement fund.

## EXPANSION

**Oxygen, Nitrogen, Argon:** Air Reduction Pacific, a division of Air Reduction Co. (New York), will boost capacity of its new air-separation plant at Richmond, Calif., to 65 tons/day. Cost of the project: \$1 million. The existing unit, which was started up last March, will be expanded 20%; and a second unit will be added to produce 32 tons/day of liquid oxygen, nitrogen and argon. Completion is scheduled for early '61.

**Polyethylene Foam:** Dow Chemical this fall will begin construction of a polyethylene foam plant to be located adjacent to its polystyrene and polystyrene foam facilities at the Hanging Rock plant (Ironton, O.). Associated Engineers (Huntington, W. Va.) will handle the engineering for the new facility, which will employ 30-40 persons. Tradename for Dow's newest foam: Ethafoam.

**Paper:** Southern Land, Timber & Pulp Co. will build its planned \$42-million pulp and paper mill at Cedar Springs, Ga. Formerly, an Alabama site had been considered. Planned capacity: 750 tons/day.

**Polyurethane Foams:** Engineers, Inc. (Newark, N.J.), will design the \$550,000 polyurethane foam plant that Nopco Chemical (Newark) will build on a 17-acre plot at Chattanooga, Tenn. Plans call for the new plant to be in operation by March 1, '61.

## COMPANIES

**Chemetron Corp.** (Chicago) is diversifying into pharmaceuticals. It has just acquired Specific Pharmaceuticals, Inc. (Bayonne, N.J.), producer of pharmaceutical chemicals and other synthetic organic chemicals.

**Olin Mathieson Chemical Corp.** (New York) has received a \$25-million contract to supply hydrazine for the Air Force's Titan II intercontinental ballistic missile. This move was foreshadowed last spring when OM received a contract to put up a \$15-million anhydrous hydrazine unit at its Saltville, Va., chemical plant (*CW Business Newsletter*, April 30). The three-year supply contract calls for deliveries to begin in '61. Other companies will supply the other components of the Titan propellant, unsymmetrical dimethyl hydrazine and nitrogen tetroxide.

**Georgia-Pacific Corp.** (Portland, Ore.) is arranging a merger with W. M. Ritter Lumber Co. (Roanoke, Va.). G-P is a major producer of pulp and other forest products; Ritter holds large timber, natural gas and coal reserves in Virginia and West Virginia.

**Bzura Chemical Co.** (Keyport, N.J.) is planning to acquire its parent company—Bzura, Inc. This move

has been approved by stockholders, and a possible \$3-million common stock offering to finance the acquisition is now being discussed with underwriters. The plan calls for issue of 2.1 million new shares of Bzura Chemical stock for all of the outstanding stock of Bzura, Inc. The 600,000 shares of Bzura Chemical stock now held by Bzura, Inc., would then become treasury shares.

**Arthur G. McKee & Co.** (Cleveland)—international plant engineering and construction company—will acquire Western Machinery Co. (San Francisco).

## FOREIGN

**Acrylic Fiber/Germany:** Farbenfabriken Bayer, already Europe's largest producer of acrylic fiber, plans to double output of its Dralon acrylic fiber by next March. Present production of 1,000 tons/month will be boosted to 1,500 by November, then to 2,000 tons/month by March.

**Plastics/Netherlands:** Foster Grant Co. (Leominster, Mass.) has established a subsidiary near Rotterdam, will build coloring and compounding facilities for its polystyrene, nylon 6 and styrene copolymer resins. Planned for a later date: resin polymerization at the site and possible raw-materials manufacture.

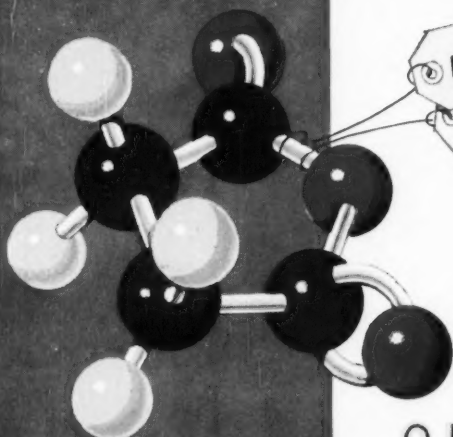
**Pharmaceuticals/Egypt:** Egypt is removing customs duties on all imported pharmaceuticals, reducing retail prices 25% as of Sept. 1. The decision came three weeks after nationalization of all Egyptian drug importing and wholesaling firms.

**Maleic Anhydride/France:** Societe Anonyme Reichhold Beckacite, an affiliate of Reichhold Chemicals (White Plains, N.Y.), will build a 10.5-million-lbs./year maleic anhydride plant at Niort, Deux-Sevres, France. Scientific Design will grant a license for use of its process and special required catalyst; it will also design the plant.

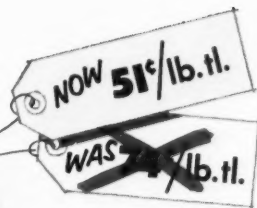
**CPI Investment/Italy:** The Italian government's industrial giant, ENI, will allocate \$192 million (28%) of its total planned expenditures to petrochemical projects in 1960-63. The agency's nuclear program will get \$80 million (nearly 12%).

**Borax/Argentina:** Officials of Borax Argentina, S.A., are seeking technical know-how, capital investment and equipment from U.S. companies to aid in expansion of its borax operations in Latin America. The company, which has giant borate deposits in Argentina, now operates a 10,000-metric tons/year boron products plant with headquarters in Buenos Aires. Sales are handled by Ubertalli Productos Quimicos, Ltda. (Buenos Aires).





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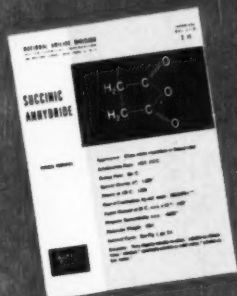
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Says auto refinishing king, Earl Scheib, Los Angeles, whose nationwide system of shops repaint nearly half a million cars a year: "AROPLAZ 6006 enables us to reduce drying time 15 minutes on the average. Rejects and returns caused by water spotting, dust pick up, or paint failure have been virtually eliminated."

Used straight, or blended with other alkyds, remarkably compatible AROPLAZ 6006 is also cutting costs and solving problems in a host of other fast air-dry and quick bake industrial applications: toys, tractors, heavy machinery, lawn mowers, and garden furniture. It's typical of the new products ADM creates for the protective coating industry.

## New ADM Adogen furfuryl quats are triple-threat bacteriostats

ADM's new family of Adogen furfuryl quaternaries combines three features ideal for industrial bacteriostats: germicidal effectiveness . . . exceptional solubility in saline or hard water . . . and much lower cost.

Through unique processing, ADM can produce a series of bacteriostatic quats with a wide variety of special properties. Adogen 446, for example, is a dimethyl hydrogenated-tallow furfuryl quaternary that's highly effective against *Desulfovibrio* and *Staphylococcus aureus* bacteria. It meets sanitizing requirements for hotel, bar and restaurant sanitizers . . . is promising for bottle washes, floor sanitizers, and industrial water treatment. ADM also has new cotton-seed and coco furfuryl quats with special bactericidal effectiveness. These are available in development quantities.

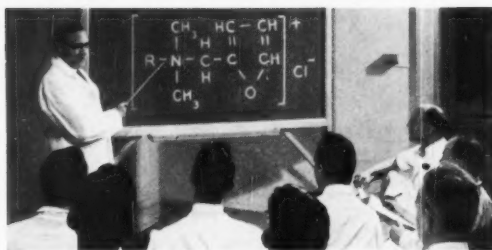
**QUATS FOR TEXTILE SOFTENERS TOO.** ADM's remarkable quaternaries improve textile softeners too. New Adogen 442 leaves less residual odor on fabrics, offers whiter color, and is non-toxic. All at no extra cost.

**BEADED AMIDES.** Lighter color and excellent storage stability already distinguish ADM's fatty amides. Now ADM offers another vital advantage: stearyl and hydrogenated tallow amides beaded for fast, easy handling. This new, uniform, non-dusting form pours freely and is one more good reason to use ADM's versatile amides in everything from waxes to printing inks.

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tion techniques to assure you highest quality chemicals. ADM's new, multi-million dollar Chemical Center will include expanded facilities for producing fatty nitrogen chemicals to better serve all your needs.



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As an intermediate for anti-static agents in synthetic fiber production . . . color dispersants in textiles . . . wetting agents in inks . . . anti-foaming agents in petroleum refining . . . or synthetic detergents, ADM's versatile, high quality Adol 32 can't be beat.

This straight chain unsaturated monohydric oleyl alcohol is virtually water-white. It offers low viscosity, low cloud point, and high chemical reactivity. Chemical reactive groups include one double bond and one hydroxyl group. Adol 32 is soluble in most solvents and non-corrosive.

Adol 32 can be sulphated, ethoxylated, or phosphated for wide variety of industrial applications. In addition to the uses listed above, it is ideal for chemical intermediates, surfactants, soaps, germicides, emulsifiers, resins, plasticizers, and lubricant additives.

## The Research Chemists' Corner

### A whale of a new derivative!

From the sea of chemistry comes a new derivative as unique and powerful as its source: the sperm whale. Methylated sperm oil. With this ADM development, you may solve tough metal wetting and incompatibility problems in the manufacture of lubricants. Free of triglycerides, methylated sperm provides by far the most economical source of mono-hydric alcohol esters.

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# Washington Newsletter

CHEMICAL WEEK  
August 20, 1960

Four liquid oxygen-liquid hydrogen fueled engines will go into each of 10 second-stage engines for the huge Saturn space vehicle. A \$65-million contract for the engines has been let to Douglas Aircraft Co. by the National Aeronautics and Space Administration.

•  
Regulations for labeling dangerous household substances will take several weeks to issue. Reason: the color additives law, passed the same day as the labeling law, is getting priority on FDA's work agenda. Data on safety of colors must be examined before extending or denying approval of their use. The household products are a new subject for FDA, and the agency is busy collecting information on the contents of various types of products.

Rather than try to state requirements for specific products, FDA will come up with regulations—e. g., the exact warning word that must be included on products containing, for instance, more than a certain percentage of lye.

•  
More overseas chemical projects—backed by the U.S. Government—may evolve from a shift in U.S. foreign aid policy now in the works. The concept represents a change in emphasis, rather than a sweeping revision; and because it's an Administration brainchild it will obviously not be binding if the Democrats win the White House. But it shows the direction of official thinking.

The idea is to use government aid funds to stress two specific kinds of foreign projects. In the less-developed areas, the funds will be used considerably more than in the past for so-called social public works. These are the power, transportation, agricultural, housing, health and educational projects that do not offer immediate profit to private investors.

For industrial projects in more-developed areas, the emphasis will be on using government aid funds as a pump primer for private investment partnerships—or consortiums—comprised of both public and private capital, U.S. and local foreign.

The industrial consortium approach is in an experimental stage. In the past the international lending institutions, the U.N. special fund, the World Bank, have handled most of the social development projects. The U.S. agencies have concentrated on economic and industrial projects.

The consortium approach already has been applied to chemical plant development in several countries. The U.S. State Dept.'s Development Loan Fund Director Vance Brand—who says this method will be increasingly used by his own and other U.S. lending agencies—cites a number of examples either now in the works or already begun: four chemical and fertilizer plants are under way in India, three on the island of

## Washington Newsletter

(Continued)

Formosa. Others are planned for Pakistan, and several Latin-American countries.

Brand believes the idea is workable in almost every area where basic development is under way—even Africa, where aluminum companies are attempting several combined hydropower bauxite reduction projects.

**Chemical companies will get a large slice of some \$100 million** earmarked for development of longer-range Polaris missiles. The first family of the solid-fueled Polaris missile—known as the A-1—has a 1,200-mile range. The second version, the A-2, to be ready by 1962, will have a 1,500-mile range. A year later, plans called for an A-3 with a 2,500-mile range. Efforts are being made to cut the time factor on the A-3 missile. That's what the extra \$100 million the Administration has just released is to be used for.

Lockheed Aircraft Corp., prime contractor on the Polaris, says it has already done lab testing on a 2,500-mile-range Polaris missile. The extra range must come mainly from a solid-fuel propellant with a higher specific impulse. Allegany Ballistics Laboratory (Cumberland, Md.), reportedly, has developed a new fuel based on a nitro-polymer (undisclosed) that increases the specific impulse by nearly 10%. This will be used by the Navy for the 1,500-mile A-2 version of the Polaris.

**Other chemical industries are joining synthetic organic** chemicals manufacturers in opposing further reductions in U.S. import tariffs on foreign competition. At Tariff Commission hearings on the government's proposed list of duty cuts in Washington, witnesses for the synthetic fibers association testified that further reductions on nylon, rayon and other synthetic fibers would seriously restrict domestic sales. Eugene L. Stewart, association counsel, charged that the U.S. is becoming a country "in which every producing nation expects to dispose of its surplus."

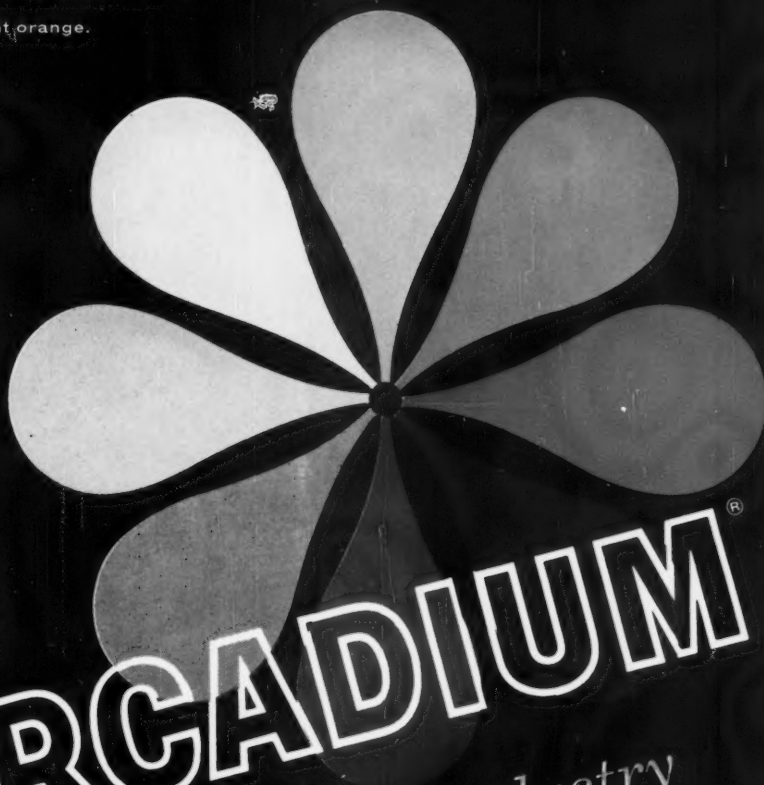
**Can the President alter tariff recommendations** made by the Tariff Commission under escape-clause provisions of the trade law? This question will go to the Supreme Court as a result of a recent Customs Court ruling in a tariff case involving imported bicycles (*CW Washington Newsletter*, Aug. 6); but the high court's handling of the case may not be binding on other similar cases, including one involving lead and zinc.

The key point hinges on the authority the White House claims under the '55 Reciprocal Trade Agreements Act. Since then, the '58 extension of that law, according to government lawyers, gives the President clearer authority to accept or reject Tariff Commission escape-clause findings "in whole or in part."

If the Supreme Court refuses to review the bicycle decision it will mean only that the President lacked the authority claimed under the '55 act. If, on the other hand, the court reviews the case, it may specifically deal with the difference between the '55 and '58 versions of the law.



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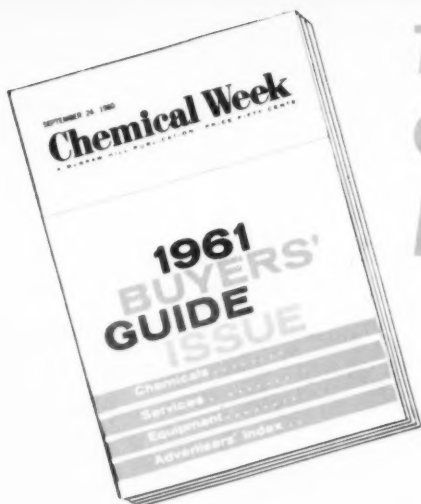


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CHEMICAL WEEK—August 20, 1960

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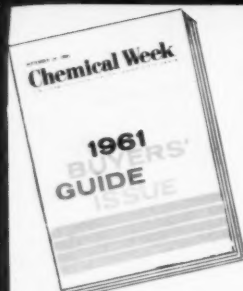
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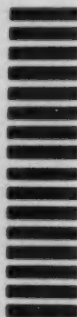
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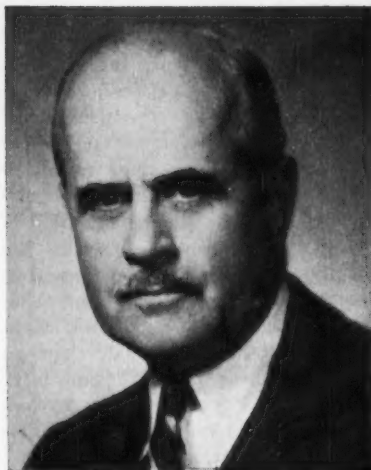
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**CHEMICAL WEEK**—August 20, 1960



Commonwealth's Harry Toulmin: 'Great many other cases like Battelle's'.



Ohio Judge George Marshall: He rules against a 'merchant's profit.'



SWRI President Goland: 'SWRI doesn't process patents for clients.'

## Court Ruling Recasts 'Tax-Free' Wrangle

The Ohio court decision barring Battelle Memorial Institute from handling clients' patent applications (CW Technology Newsletter, Aug. 6) could be an argument for retaining the tax-free status of research institutes. That's one of a variety of opinions on the ruling given Chemical Week this week by commercial and nonprofit labs and by legal experts.

It comes from Phillip Folk, member of the Ohio State Bar Assn., and counsel for the Unauthorized Practice Committee of the Columbus Bar Assn., which initiated the court fight against Battelle. If the court had ruled in favor of Battelle, Folk believes, it would indicate that the institute was "in business to make money."

Folk and fellow committee member Robert Albright point out that the decision was an "action in injunction," merely upholding state statutes that prohibit a corporation from practicing law. The committee's objective was to prevent Battelle from "advertising, contracting and billing" its sponsors for legal work.

However, the ruling, even though it is restricted to Ohio, comes at a critical time for the nonprofit organizations; and some legal observers sense broader implications, particularly in view of the pending rule-making by the Internal Revenue Service on taxing "scientific" institutions.

Hearings are over, but there's still no indication when the ruling will be made.

In defining a "scientific organization," IRS says it must be organized and operated in the public interest, not toward promoting private gain. That's a description nonprofit groups covet—and one reason the Battelle decision attracted so much attention.

Commercial labs claim the so-called "nonprofits" compete with them for clients, perform similar services and should be taxed. They seek a law that would require nonprofits to make results of their research freely available to the public. Conversely, they object to non-profits' doing work for individuals who have a right to obtain ownership or control of any patents, copyrights, processes or formulas resulting from such research.

A major nonprofit antagonist, Lewis Harris, chairman of the American Council of Independent Laboratories' committee on legislation, says that nonprofit research institutes and certain departments of some universities "have built up tremendous business volumes in providing applied research and testing services for industry and government. And there is no reason why such services should be exempt from taxation."

The long (three and a half years) and complicated Battelle case dis-

closed that the institute did about \$23 million worth of business in '59. But only 25 patent applications were handled for its sponsors last year. Why Battelle would push this matter into court is still a mystery to Cleveland patent attorney Albert Teare, a member of the Ohio State Bar Assn.'s Committee on Unauthorized Practices. One probable answer is Battelle's desire to continue the convenience of its service to the research project sponsor (who has always retained the option of using his own counsel).

Still, Battelle's action elicited this comment from Franklin County Common Pleas Judge George Marshall in his Columbus decision. The type of law practice permitted at Battelle, said Marshall, "amounts to the practice of law as a commercial matter to make a 'merchant's profit' rather than limiting the professional services of its attorneys to Battelle." He ruled that Battelle attorneys are not in a position to set up "proper attorney-client relationships with sponsors."

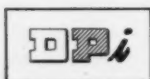
Battelle admits its patent activity is small, points out that the court verdict does not jeopardize a sponsor's rights to his patentable developments, simply affects the mechanics of securing patents.

None of the major nonprofits surveyed considers the Battelle ruling di-



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## RESEARCH

rectly important. Southwest Research Institute (San Antonio) President Martin Goland says SWRI does not process or file patents for its clients, suggests outside lawyers to the client when requested to help. Armour Research Foundation's vice-president for business operations, W. M. Cousins, Jr., says ARF handled only one patent application for a client, had some doubts about the propriety of this. Not from a legal ethics standpoint, he notes, but from another point of view: "Should we include this as part of the service—shouldn't the client pay for it himself?"

Midwest Research Institute (Kansas City, Mo.) doesn't employ lawyers. Stanford Research Institute (Menlo Park, Calif.) lawyer Jeffrey Steel says SRI has a firm policy against processing patents for clients. If the client doesn't have an attorney, SRI recommends one. There is no patent attorney on SRI's legal staff.

Even among commercial labs, patent attorney staffers are scarce. Evans Research & Development and Foster D. Snell (both in New York) use outside attorneys when needed. (Evans employs a girl who helps set up data for patents.)

But some independent commercial labs welcome the Battelle decision. Harry Toulmin, Jr., chairman of the board of Commonwealth Engineering Co. of Ohio (Dayton), calls the court ruling a "very wise decision that will call for extensive investigation into possible abuses of the practice of law by corporations. By this, I mean there are undoubtedly a great many other cases, like Battelle, in which this professional privilege has been abused contrary to law. This decision may smoke a lot of rabbits out of the bush."

James Rand, president of Rand Development Corp. (Cleveland), says he is willing to compete at any time with nonprofit organizations—but points out that at Rand all patent applications for customers are handled by an outside patent attorney directly with the customer and only on "consultation" with Rand.

Observers feel that Battelle will probably appeal the recent court decision. Such action would be closely watched by many nonprofits (including universities) with a stake in the swiftly expanding (to an estimated \$19.5 billion by '65) research market.

## Management Scrutiny

The job of the research manager came in for special scrutiny at the just-ended 11th annual Industrial Research Conference, sponsored by Columbia University at Arden House, Harriman, N.Y. The meeting revived this exhortation (ascribed to Arthur D. Little): "Don't mistake an organization chart for an organization."

Merritt Williamson, dean of the college of engineering and architecture at the Pennsylvania State University (University Park, Pa.), counseled: "Research and development management is different" [from other types] and "good research development people require treatment different from [that accorded] the other workers in the company."

Williamson proposes cooperation of research management and staffers in "a freewheeling sort of way"; he disparages heavily manualized management procedures. "If you, as a manager, are not willing to tolerate a rather freewheeling (sloppy, if you will!) service function, then you may as well expect not to optimize your output," he cautions. "The most beautifully run, most orderly, most efficient type of research and development organization is, from my experience, not a good spawning ground for some of your really charged-up creative persons."

He urges consideration of the "upside down" organization chart, in which the manager supposes himself working for the staff while actually retaining leadership. As the apex of the inverted triangle, the manager provides necessary coordination, supplies necessary facilities, environment and policies. "The important thing," says Williamson, "is that you no longer see yourself as chief provider, chief judge, chief director, chief decision-maker, and chief dispenser of rewards and sanctions. Rather, you think of yourself as being incompetent to make the bench-level decisions; you leave it up to the men to do their assigned jobs, and you work for them to help them get things accomplished."

A "clinical approach" to successful management is advocated by William Waite, associate director of the conference: "The manager will find that he needs in his kit of tools a well-sharpened ability to look upon his

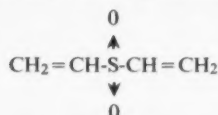


# Progress Report...

- Divinyl Sulfone
- Butyl Acetate
- TERGITOL E-35
- Diethyl Amine

## New reactive monomer

A new reactive monomer is on the scene. And, its valuable properties should put it in every evaluation lab where new resins are being made. This new monomer is divinyl sulfone, and it looks like this:



Divinyl sulfone undergoes both vinyl and condensation reactions. It is very reactive because of the activating influence of the oxygen atoms on the double bonds.

Divinyl sulfone reacts with compounds containing active hydrogens, such as amines, alcohols, and polyols. This CARBIDE monomer forms polymers with diols—from ethylene glycol to the higher polyglycols, with urea, and with malonic esters. These polymers range from viscous oils to hard resins and show promise as textile fibers, adhesives, and film formers.

Divinyl sulfone will cross-link cellulosic textiles such as cotton and rayon. It is strongly indicated that this gives shrink-resistance to the cloth.

Cross-linked polymers, varying in the degree of fusibility and solubility, can be obtained by copolymerizing divinyl sulfone in amounts up to ten per cent of the polymer composition.

Using a free radical catalyst, divinyl sulfone can be copolymerized with the common active monomers such as acrylamide, acrylonitrile, acrylic esters, butadiene, styrene, vinyl chloride, and vinyl esters.

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Butyl acetate serves as the standard for comparing solvents used in the lacquer industry. This versatile medium-boiling solvent for nitrocellulose is important in making lacquers, dopes, photographic films, plastics, and many types of coatings. Formulations containing butyl acetate acquire outstanding viscosity prop-

erties, freedom from humidity blush, and resistance to orange peel.

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## New surfactant for detergent compounding



CARBIDE's research in surface active agents has brought forth several new nonionics with characteristics particularly suitable for detergent-making. One of these, TERGITOL E-35, is a caustic-stable nonionic developed especially for use with dry alkaline compounds, such as flake caustic or sodium metasilicate. The cloud point of a 0.5 per cent solution of E-35 in distilled water is 35° C. Its low foaming and good wetting action make this new TERGITOL surfactant highly effective in detergents intended for heavy-duty cleansing, such as bottle washing, metal cleaning, and commercial dishwashing.

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Below is a review of their characteristics. Look them over. You may get the germ of an idea which will lead you to the improvement of existing products, or to the reduction of new product manufacturing costs. Should an application suggest itself . . . let us know. We'll be glad to cooperate with you in exploring the possibilities. Address Department 39, C. K. Williams & Co., 640 N. 13th St., Easton, Pennsylvania.

NAME	PROPERTIES	CHARACTERISTICS
Pure Red Iron Oxides	$\text{Fe}_2\text{O}_3$ -99.5% SpG.-5.15 Color—Salmon to purplish red	<p><b>Composition:</b> The basic colors of the iron and chromium oxides are determined by chemical composition. Reds are ferric oxide (<math>\text{Fe}_2\text{O}_3</math>); yellows, hydrated ferric oxide (<math>\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}</math>); blacks, ferro-ferric oxide (<math>\text{Fe}_3\text{O}_4</math>); and greens, chromic oxide (<math>\text{Cr}_2\text{O}_3</math>). All these compounds are chemically stable and light permanent.</p> <p><b>Particle Shape:</b> Physical properties such as oil absorption and suspension characteristics are dependent on particle shape, controlled by manufacturing processes.</p> <p><b>Size:</b> Color range is controlled by particle size—average size increases as color darkens. Uniformity of size determines brightness.</p> <p><b>Purity:</b> Freedom from impurities is essential for superior pigment properties and to prevent deleterious effects in end-products. Control of soluble salts, manganese and copper content are an important part of the Williams' manufacturing operation.</p>
Pure Yellow Iron Oxides	$\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$ -99% SpG.-4.03 Color—Lemon to dark orange	
Pure Black Iron Oxides	$\text{Fe}_3\text{O}_4$ -96% min. SpG.-4.96 Color—Blue Black	
Pure Chromium Oxides (and Hydrates)	$\text{Cr}_2\text{O}_3$ -99% SpG.-5.20 Color—Light to dark green	
Natural Oxides—Ochers, Umbers, Siennas, Metallic Browns, Red Oxides	Wide range of ferric oxide content and red, yellow and brown colors	
Venetian Reds	$\text{Fe}_2\text{O}_3$ -40% SpG.-3.45 Color—Light to medium red	
Cuprous Oxide	$\text{Cu}_2\text{O}$ -97% min.	
Extenders—Barytes, Calcium Carbonate, Calcium Sulfate, Silica	Wide range	

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## RESEARCH

problems as sociological and psychological situations as well as to view their technological complexities." By accepting staffers as they are and trying to understand them, he says, managers are in a better position to assign responsibility commensurate with ability, to reward work well done, and to admonish when necessary.

"The manager using the clinical approach also recognizes that his own set of values and his outlook are not necessarily identical with those of the people with whom he comes in contact, but he sees no necessity for changing his own viewpoint merely to conform. Nor does he feel that the other person must agree with him on pain of being labeled an imbecile or a radical," he adds.

Conference speakers agree that research managers are coming into tighter world supply—especially in industrialized areas now undergoing a revolution in complexity of technology. Not only more but also better qualified managers, they feel, will be needed to offset the shortage.

## Radiation Push

Industrial radiation research got another boost last week, this time from two sources. Radiation Applications Inc. (Long Island City, N.Y.) was granted Atomic Energy Commission contracts to make two studies on radiation techniques for polymer cross-linking and graft copolymerization. And High Voltage Engineering Co. (Burlington, Mass.) will build a \$1.7-million, high-intensity linear accelerator for the National Bureau of Standards.

First part of RAI's work will be a comparative study of isotope and machine sources of radiation for graft polymerization. RAI will study both technical and economic aspects of grafting four different monomers to polyethylene and nylon. A cobalt-60 source will be used to obtain the isotope data, and accelerators at General Electric, High Voltage Engineering and Radiation Dynamics will provide comparative data for machine-produced electron bombardment.

The other RAI study will be directed at lowering the radiation dose required to cross-link polymers (now around 10 million rads). The company hopes to lower the required radiation 90% by adding a monomer to the

## RESEARCH

polymer before radiation. Four monomers will be studied with rubber, polyethylene, polystyrene, polypropylene and ethylene-based copolymers.

High Voltage Engineering's new accelerator will be a 150-Mev Linac that can deliver 40 kw. of power, greater than that obtainable from any previous linear accelerator, and capable of delivering  $10^9$  rads in one minute.

The device will be used by Bureau of Standards to determine a wide variety of nuclear data and to aid in the development of reactor design and of industrial radiation techniques. Location will be on NBS's new 550-acre site at Gaithersburg, Md.; installation is planned for '62.

## EXPANSION

- The Research Division of Du Pont's Explosives Dept. has been reorganized, renamed the Research and Development Division. Both fundamental research and technical service functions of the division will be strengthened, Du Pont says. Robert Cavanaugh, research director, will continue as head of the unit.

- The Andrew Jergens Co. is doubling its laboratory facilities at Cincinnati, plans to add additional research and development personnel.

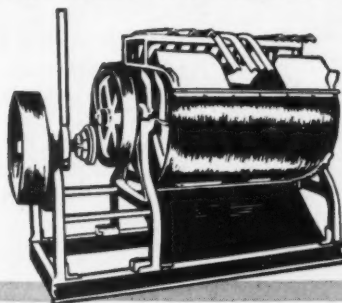
- Ford Motor Co.'s Aeronutronic Division (Newport Beach, Calif.) has reorganized its research to stress long-range programs. The Aerothermochemistry and Materials Activity has been discontinued, but four new activities have been added. Seven in all, the research activities are titled Chemistry and Materials, Propulsion, Experimental Equipment, Mathematics and Computing, Physics, Physical Electronics and Bionics, and Environmental Test.

- The St. Regis Paper Co. plans to build a \$3-million technical center on a 60-acre site at Clarkstown, Rockland County, New York. It's for research in paper, plastics, packaging, and forest products.

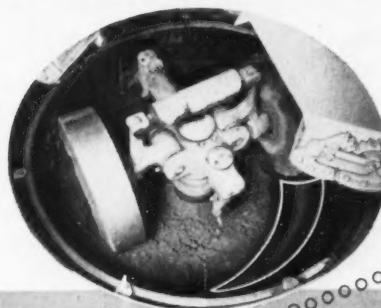
- Allis-Chalmers Mfg. Co. recently completed a ceramic nuclear fuel development laboratory at its Greendale, Wis., laboratories.

- Phillips Chemical Co. has expanded its sales service laboratory from 16,000 to 20,000 sq.ft., making it what is said to be the largest laboratory in the country devoted exclusively to the technology of high-

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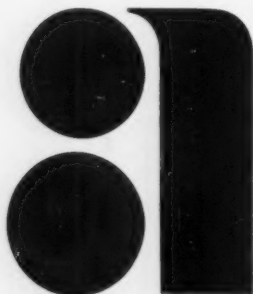
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Gas 0°C, 1 atmos... 1.74  
BOILING POINT °C, 760 mm... —23.76  
°F, 760 mm... —10.76  
REFRACTIVE INDEX,  $n_{20^\circ\text{D}}$   
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Gas—25°C... 1.000703  
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in 100 cc. of solvent (20°C, 760 mm)  
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## RESEARCH

density polyethylene and olefin copolymers.

- Convair Division of General Dynamics Corp. will build a \$250,000 space radiation facility at San Diego. Radiation Dynamics, Inc., will supply the accelerator, a 3-million-volt electron-or-ion accelerator, which will be ready by March '61. Additional units will be built later.

- Dow Chemical Co. will build facilities to house its newly created chemical end-use research laboratory. The new lab, to be ready by early '61, will function similarly to other Dow laboratories for end-use research in plastics, magnesium and agricultural chemicals.

- The Color Division of Ferro Corp. has completed a \$60,000 expansion of its Cleveland laboratory facilities for development of new colorants and coloring techniques for plastics, porcelain enamel, clayware and glass.

## PRODUCTS

**Intermediates:** For synthesis of dyestuffs, surface-active agents, pharmaceuticals, and other compounds, pilot-plant quantities of *m*-sulfobenzoic acid are now offered by Beacon Chemical Industries, Inc. (35-51 Richdale Ave., Cambridge 40, Mass.).

Derivatives, adducts and complexes may be made with tetracyanoethylene, new research chemical from Fabian Chemical Co. (590 Outremont St., Montreal 8, Canada). Price \$9.50/gm., up to 5 grams.

**Electronic Aids:** Semi-Elements, Inc. (Saxonburg Blvd., Saxonburg, Pa.) now offers high-purity magnesium oxide for use in semiconductor and other electronic devices, also produces semiconductor-grade cadmium telluride.

**Drug Entry:** Purified thyroglobulin for pharmaceutical uses is now available from Reheis Co., Inc. (Berkeley Heights, N.J.).

**Polysaccharide:** "Native dextran," having a molecular weight of 5 to 40 million, is now offered by Dextran Chemicals, Inc. (509 Fifth Ave., New York 17, N.Y.).

**Polypeptides:** Pilot Chemicals, Inc. (36 Pleasant St., Watertown 72,

Mass.), now offers high-molecular-weight synthetic polypeptides. Included: polymers of glutamic acid, phenylalanine, and lysine hydrobromide.

**Cross-Linkers:** Propylene imine and its derivative tris-[1- (2 methyl) aziridinyl] phosphine oxide (MAPO) are now available from Interchemical Corp. (New York). Compounds are suggested for making cross-linked polymers, are thought to be potentially useful in textile finishing, etc.

**Olefin Catalysts:** Texas Alkyls, Inc. now offers tri-*n*-propylaluminum, tri-*n*-butylaluminum, tri-*n*-hexylaluminum, and triisohexylaluminum (tri-2-methyl-pentyl-1-aluminum) for use as polyolefin catalysts and as intermediates. Anderson Chemical Division, Stauffer Chemical Co. (New York and Weston, Mich.), is sales agent. Prices: \$25-50/lb. in ½-lb. samples.

**Palladium Entry:** A new palladium alloy suggested for commercial hydrogen purification is offered by J. Bishop & Co., Platinum Works (Malvern, Pa.). Compared with pure palladium, the alloy is more than twice as permeable to hydrogen, cheaper, rugged, easily fabricated and long lasting. Diffusion cells of the new alloy in various sizes are furnished by Bishop for selective separation of pure hydrogen from hydrogen-containing gas mixtures.

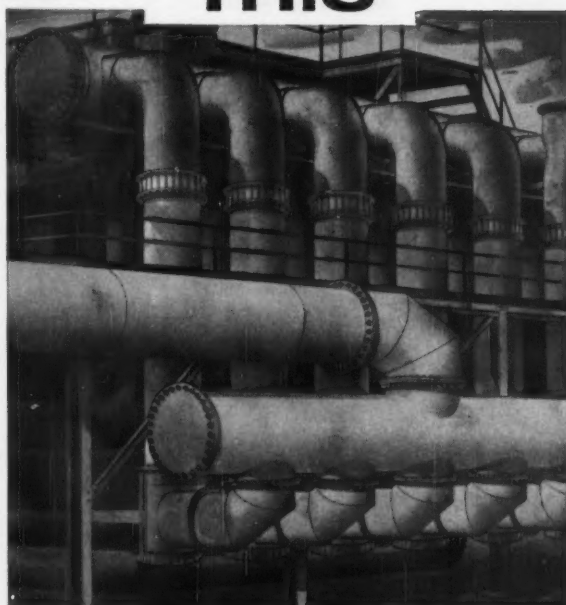
## LITERATURE

- The American Petroleum Institute expects to expand its central abstracting service to cover patents as well as publications next year, if enough interest is shown by members.

- The first of about 100 volumes in a series called International Encyclopedia of Physical Chemistry and Chemical Physics has been published by Pergamon Press, Inc. (New York). Title: "Elements of the Kinetic Theory of Gases," by E. A. Guggenheim. Price: \$3.

- New York Testing Laboratories, Inc. (47 West St., New York 6) is introducing a new subscription service called NYTL Laboratory Guide Reports. At least four reports will be sent each month to subscribers, giving NYTL's latest experience in using and developing laboratory techniques.

# THE DIFFERENCE BETWEEN **THIS** and **THIS**



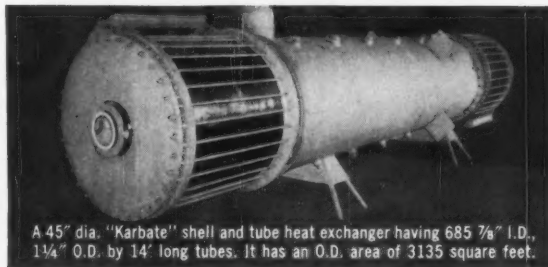
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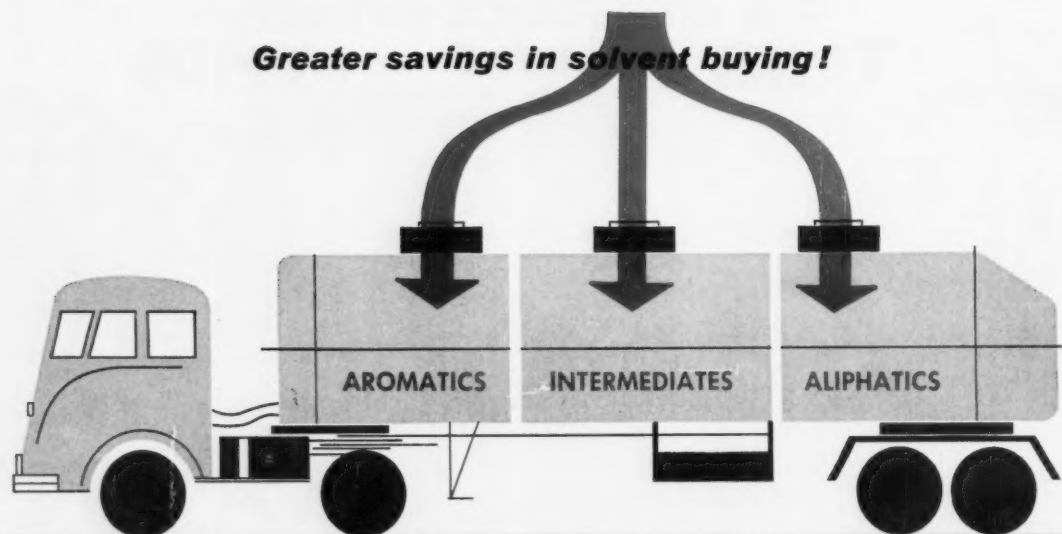
A 45" dia. "Karbate" shell and tube heat exchanger having 685  $\frac{7}{8}$ " I.D., 1 $\frac{1}{4}$ " O.D. by 14' long tubes. It has an O.D. area of 3135 square feet.

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## ADMINISTRATION

# Drugmakers Attack Counterfeits

In the filth of a seventh-floor drug manufacturing plant in Hoboken, N.J., last week, drugmakers took their first public swing in a new campaign to squelch producers and distributors of illicit drugs. Drug companies sponsored a press inspection of the premises of General Pharmacal Co., charged with making drugs under unsanitary conditions. The firm's officers are accused of forging pharmaceutical products of several major manufacturers.

The showing followed a raid last month of the premises by New Jersey state and local police and health officials. Preceding the raid was a 10-months' investigation of druggists' tips that salesmen were trying to peddle counterfeits to them.

This action opened the drugmakers' campaign. Still to come:

- Widespread publicity about two court cases. One, begun last week against General Pharmacal, concerns charges that it produced drugs under "grossly insanitary" conditions, with less than legal proportions of essential components. The other, in preliminary hearings, pertains to charges that General Pharmacal's President Howard Press and Plant Manager William Etis, along with an independent chemist, Isidore Rutstein, were counterfeiting and distributing on a

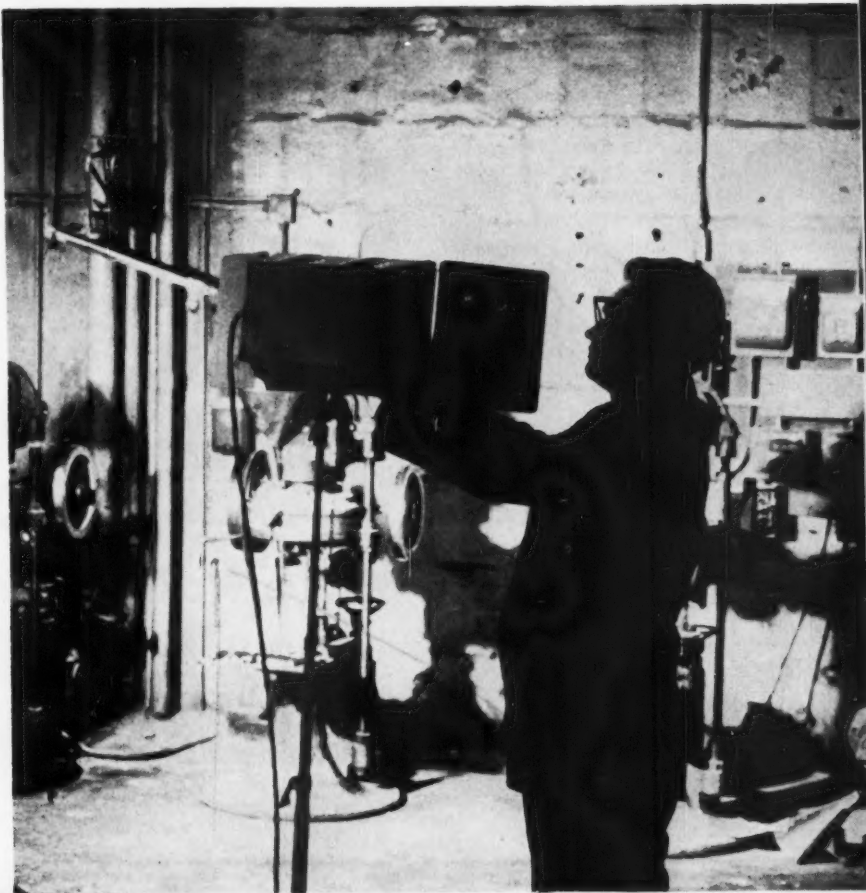
Health Chief Ruth: More investigations on the way in New Jersey.



CW PHOTOS—ED WALLOWITZ

Pigsty plant conditions turned up in health officials' raid.

Movie promotion will help warn public of illicit-drugs dangers.



## ADMINISTRATION

nationwide scale, products of firms such as Smith Kline & French, Ciba, Schering, Merck, Wyeth, Wallace Laboratories, Warner-Chilcott.

- Suits, not yet filed but expected this fall, by at least one major drug company against 21 retail druggists who have, supposedly knowingly, bought counterfeited products.

- Crackdowns by state investigators on counterfeit outlets in Florida, Texas, Illinois and other states. Milton Ruth, head of New Jersey's bureau of foods and drugs, says he has other investigations in the works. In Canada, too, probes into the firm's outlets are under way.

- Intensified efforts by drugmakers to bring to light and publicize (see picture, p. 45) other cases in which the manufacture of drugs can prove harmful to the public. Companies will use techniques such as motion pictures, speeches, booklets, brochures. A major medical association is readying an as-yet-unannounced campaign.

**The Problem:** Right now the brunt of the campaign is being carried by Schering and Ciba, although it's expected that other firms will join them as progress of the trials becomes clearer. The problem they're attacking is not simple.

Keystone, they say, is the counterfeiting issue, with its attendant problem of health hazards arising from spurious products, unfavorable publicity for the companies whose products are mistakenly blamed, and the siphoning off by counterfeiters of legitimate sales.

But drugmakers differ on the extent of the problem. One major producer estimates counterfeiting costs it about \$1 million yearly. Of 52 stores where its private detectives have recently shopped, eight were using counterfeits, two were substituting generic equivalents for the investigating company's brand product. Some producers estimate that 3% of all prescriptions are filled with counterfeit drugs.

Companies most affected are those with easily reproduced products. Tranquilizers (one of the most frequently prescribed drugs), weight reducers and so-called "pep" pills are favorite targets. But firms that make products that require costly processing—e.g., antibiotics—are little affected.

**Other Elements:** But the current counterfeiting revelations are only

one element in the drug industry's campaign. Drugmakers believe their recent actions are, in effect, evidence that the industry can police itself, and that, contrary to imputations of the Kefauver drug hearings, the industry does care about the welfare of the public.

Revelations of unsanitary manufacturing conditions in some plants can be used as evidence that so-called "generic equivalents"—which the industry fears as a cut-price invasion of its markets—are not always produced under the best of circumstances. Moreover, such revelations are powerful publicity in the campaign

to get such states as New Jersey to pass laws requiring the licensing of wholesale manufacturers and distributors of drugs.

Because of the purposes the current crackdown can serve, it's probable that it will be carried to the limit. Checks with state and local authorities indicate that close watch is being kept in many places on the activities of fringe-type drugmakers.

**Outlook:** All these activities, while as yet scattered and uncoordinated, indicate that companies will soon be drawn more and more into joint efforts to battle spurious products jeopardizing their names and markets.



WIDE WORLD

## Stone Workers' Watch on the Mine

Members of the United Stone Workers Local 1,600 near Saskatoon, Sask., took to a watchtower to observe goings on at Potash Co. of America's mine shaft at Patience Lake

during a strike against Cementation Co. of Canada, Ltd. The firm is waterproofing Potash's mine shaft. Employees sought a 50¢/hour wage package, including travel allowances.

# Lasting Protection...

*Thanks to treatment with  
RCI Pentachlorophenol*

• Fences treated with PENTA promise long life and enduring beauty—two valuable sales features. In addition, there are several other principal reasons why the wood industry is turning to this modern method of protecting lumber for exposed structures:

**1 Costs No More**—Service records show that PENTA treatment gives poles, cross ties, and other wood products used outdoors, extra long life and reduces maintenance costs.

**2 Won't Leach Out**—Because PENTA is an oil-borne rather than a water-soluble preservative, it doesn't leach out. PENTA stays in the wood keeping it safe from attack by rot and termites.

**3 Clean to Handle**—Construction and maintenance supervisors know that workmen handle clean wood faster and more efficiently. This can lead to important savings.

Reichhold is a major supplier of PENTA to the wood industry and to wood users. Write Reichhold today for the name of your nearest distributor of RCI PENTA.

*Creative Chemistry...  
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Hydrochloric Acid • Formaldehyde • Phthalic Anhydride  
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Pentaerythritol • Pentachlorophenol • Sodium Pentachlorophenate  
Sulfuric Acid • Methanol

REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N. Y.



Fence by DuBois Fence and Garden Company, treated with RCI PENTA.



## New PR Tool

**Chemical process management is building goodwill for its industries via a new route: sponsoring cultural events.**

Latest such effort—by the Louisiana Chemical Industry Activities Committee (part of the Louisiana Chemical Assn.) — was made last Saturday night, "Petroleum and Chemical Industry Night," at the New Orleans "Pop" Orchestra concert. As the organizing force behind the idea, the LCIAC actively promoted attendance at the concert and made tickets available.

Although this was the first time a CIAC group had promoted a musical event to build goodwill for local industry, individuals and companies have done so. Last February Monsanto Chemical Co. sponsored for its employees and friends a performance by the St. Louis Symphony Orchestra and pianist Van Cliburn. Conductor Edouard VanRemoortel believes the event was the first industry-sponsored symphonic concert in this country, although the practice is widespread in Europe.

Another CPI impresario is Henry Reichhold, president of Reichhold Chemicals, Inc. He sponsored several seasons of the Detroit Symphony Orchestra and has donated an academy of music to West Berlin.

## LEGAL

**More Local Antitrust:** Chemical suppliers are coming under antitrust guns again, this time in Ohio. Three major salt companies—International, Morton and Diamond—have been awarded Ohio Dept. of Highways contracts to provide approximately \$1.8 million worth of salt during the 1960-61 season. Bids tendered by each company were identical within each county. The U.S. Dept. of Justice has been notified. Each company will supply salt for about one-third of the state. The firms also submitted identical bids last year, and contracts were awarded on the basis of nearness of supply source to the area.

Also in Ohio, Cleveland's acting mayor, R. J. Locher, sent telegrams to three chemical companies asking for an explanation of identical bids—precisely to the hundredth of a cent—on an order for 900 tons of fluo-

ride. A fourth company, Allied Chemical's General Chemical Division, was awarded a contract on a bid 1¢/ton lower. Three other suppliers declined to bid on the contract. Locher has requested the Ohio Municipal League to investigate bidding practices in cities throughout the state.

**Bud, Bugs:** A temporary injunction was granted in Tallahassee, Fla., federal court to keep Chemical Corp. of America, manufacturer of Free-wax (a floor wax that kills bugs), from using the slogan "Where there's life, there's bugs." The petition for injunction was filed by Anheuser-Busch, Inc., brewer of Budweiser beer. Its slogan: "Where there's life, there's Bud." The defense attorney contends that both slogans are parodies of "While there's life, there's hope," a line in a poem that's been in the public domain since 1700.

## LABOR

**Jefferson Pressure:** Unfair labor practice charges against Oil, Chemical & Atomic Workers Union, criminal charges against its members and suspension of 16 workers apparently convinced employees that they should go back to work at Jefferson Chemical Co.'s Port Neches, Tex., plant, strikebound since May. OCAW ordered its members back to work, in their "best interest," agreed to start up the plant over a three-day period and to run it for a month without further strike or walkout. In return the company withdrew its charges and rescinded the suspensions. Meanwhile, negotiations over a new contract are proceeding.

**USI Contract:** At Tuscola, Ill., U.S. Industrial Chemicals, division of National Distillers and Chemical Corp., and Local 515 of the International Union of Operating Engineers have signed a two-year contract calling for a 12¢/hour wage increase the first year and an 8¢/hour hike the second. The agreement also includes improved holiday pay provisions and changes in overtime pay.

**Geigy Settlement:** A five-week strike at Geigy Chemical Corp.'s McIntosh, Ala., pesticides plant was ended when management and Oil, Chemical & Atomic Workers Local

9-562 agreed on a two-year contract. Terms call for individual increases within job classifications, ranging from 10 to 23¢/hour in the first year. Other provisions call for an additional holiday, improved insurance benefits and vacation scheduling, and an increase in lunch money. About 270 of the plant's 350 employees are represented by the union.

## KEY CHANGES

**E. W. Carey** to president and chief executive officer, Fibreboard Paper Corp. (San Francisco).

**Elliot H. Hartford** to board of directors, A. S. Harrison Co. (South Norwalk, Conn.).

**Thomas R. Vaughan** to vice-president and general counsel, **John C. Carrington** to vice-president, sales, Freeport Sulphur Co. (New York).

**Robert G. Smith** and **John Seidler** to vice-presidents, Whittaker, Clark & Daniels, Inc. (New York).

**Edward W. Beardsley** to Southern regional vice-president, Industrial Division, Corn Products Sales Co., subsidiary of Corn Products Co. (New York).

**Christopher H. Buckley** to vice-president, Knox Glass, Inc. (Knox, Pa.).

**W. M. Hearon** to vice-president, research and development, Crown Zellerbach Corp. (San Francisco).

**John T. Mera** to vice-president, B. T. Babbitt, Inc. (New York).

**Paul A. Mattis** to vice-president and board of directors, Pharmacology Research, Inc. (Darby, Pa.).

**Alexander Lewis, Jr.**, to vice-president, petrochemicals, Gulf Oil Corp. (Houston, Tex.).

**Sidney D. Upham** to vice-president and research director, Marine Colloids, Inc. (New York).

**D. H. Francis** to manager, all chemical products production, The Goodyear Tire & Rubber Co. (Akron, O.).

**H. W. Bajak** to general sales manager, Arizona Chemical Co., jointly owned subsidiary of American Cyanamid Co. and International Paper Co. (New York).



***PUSH THE  
BUTTON***  
*and these BIRDS go to work!*  
**INSTANTLY • SMOOTHLY  
CONTINUOUSLY • TIME AFTER TIME,  
MONTH IN AND MONTH OUT**

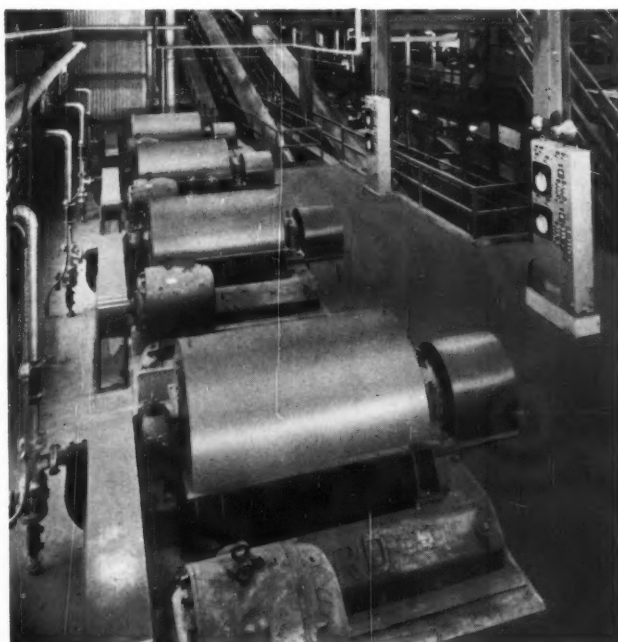
The Bird Solid Bowl Centrifugal was called a *continuous* Centrifugal to distinguish it from batch machines. But its users will tell you that the word "continuous" describes its *performance* as well. From the moment they're installed, push button start-ups are

taken for granted. They run and keep on running without a hitch. If you've ever operated a Bird we don't have to tell *you* this. If you haven't, ask any of its hundreds of users if this isn't one of the outstanding advantages of Bird Solid Bowl Centrifugals.

*For example, we recently came across a Bird that has handled a BILLION POUNDS of salt. In the course of a routine annual check-up on a Bird that has been running 20 hours a day every day in the year it was discovered that it had been doing so for twenty-three years, during which it had separated 1,007,400,000 pounds of salt from caustic.*

**Isn't this the equipment to handle  
your solid-liquid separations?**

The Bird Research and Development Center is equipped to determine, without bias, whether it's the one best way to do the job, because Bird builds all types — batch centrifuges, continuous screen as well as solid bowl centrifugals, drum and pan vacuum filters and pressure filters. Let us help you to accomplish solid-liquid separations that require only the push of a button.



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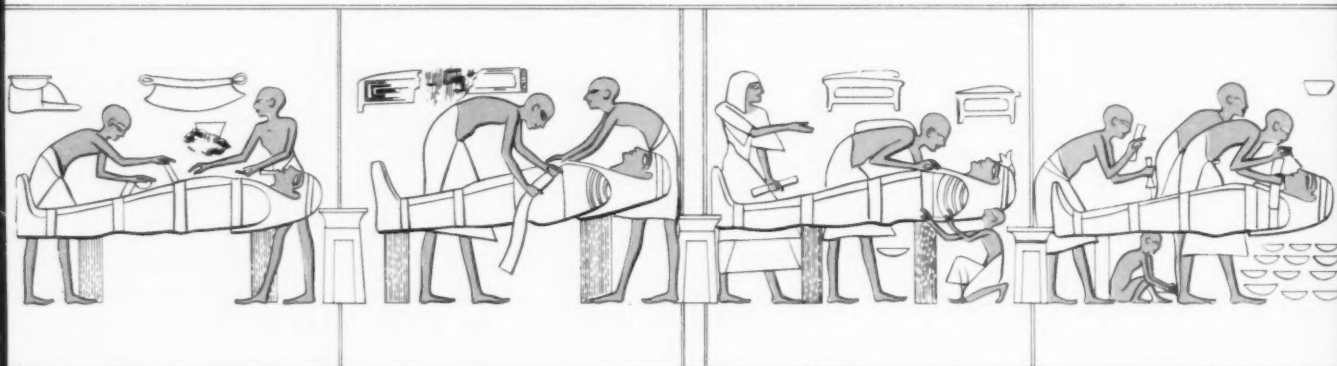
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 LA PORTE, TEXAS • ALAMO, CALIF.

# Mumiya

is the old Arabic word for natural pitch. It used to ooze out of natural deposits in the hills and was carried by streams into the Dead Sea where it congealed. Ancient embalmers gathered the lumps, melted them, and used the hot liquid to prepare their dead for eternity.

The body was filled with pitch, resin, and costly spices, then coated with more pitch. It solidified to make an air-tight, moisture-proof encasement for the mummy. Check any metropolitan museum to see how well the Egyptians did their job.

Today's embalming methods and materials have changed. Pitch, too, has been modernized to meet corrosive conditions the ancient Egyptians never dreamed of...moisture, soil acids and alkalis combine to attack electrical, plumbing and drainage lines which are buried underground in modern construction.



Today's fibre pipe, for example, is made from a superior pitch, distilled from coal tar. Modern fibre pipe is tough and resilient, light but strong. It resists moisture, alkalis and acids, and gives pyramid-like permanence to below-ground installations.

Coal tar pitch is one of the quality USS Chemicals from United States Steel. Chemical Sales Offices in Pittsburgh, New York, Chicago, Salt Lake City and Fairfield, Alabama.

Benzene • Toluene • Xylene • Phenol • Cresol • Cresylic Acid • Naphthalene • Creosote • Pitch • Picoline Pyridine • Ammonium Sulfate • Ammonium Nitrate  
Anhydrous Ammonia • Nitric Acid







Golden mummy case of Pharaoh Tutankhamen, found in his tomb in the Valley of the Kings.

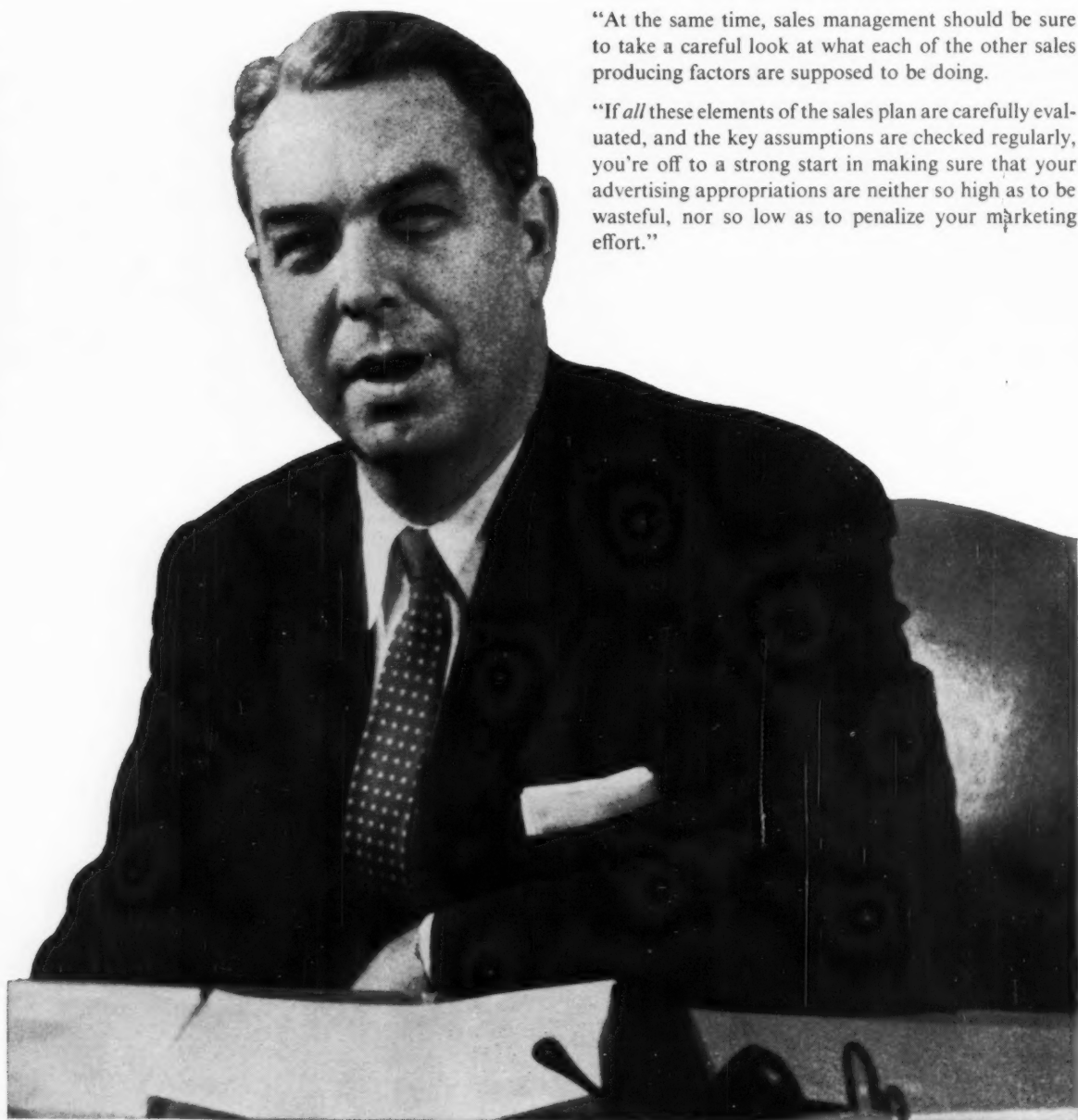
# "How much is enough for advertising?"

JOHN R. SARGENT, partner in the nationally-known management consultant firm of Cresap, McCormick and Paget, points the way toward solution of one of top management's knottiest problems.

"Good sales management generally knows the crucial sales problems faced by each one of its products. Through good advertising advice plus experience, trial and error, and some judicious advertising testing, sales management also can come to have a good understanding of what advertising can and cannot do.

"At the same time, sales management should be sure to take a careful look at what each of the other sales producing factors are supposed to be doing.

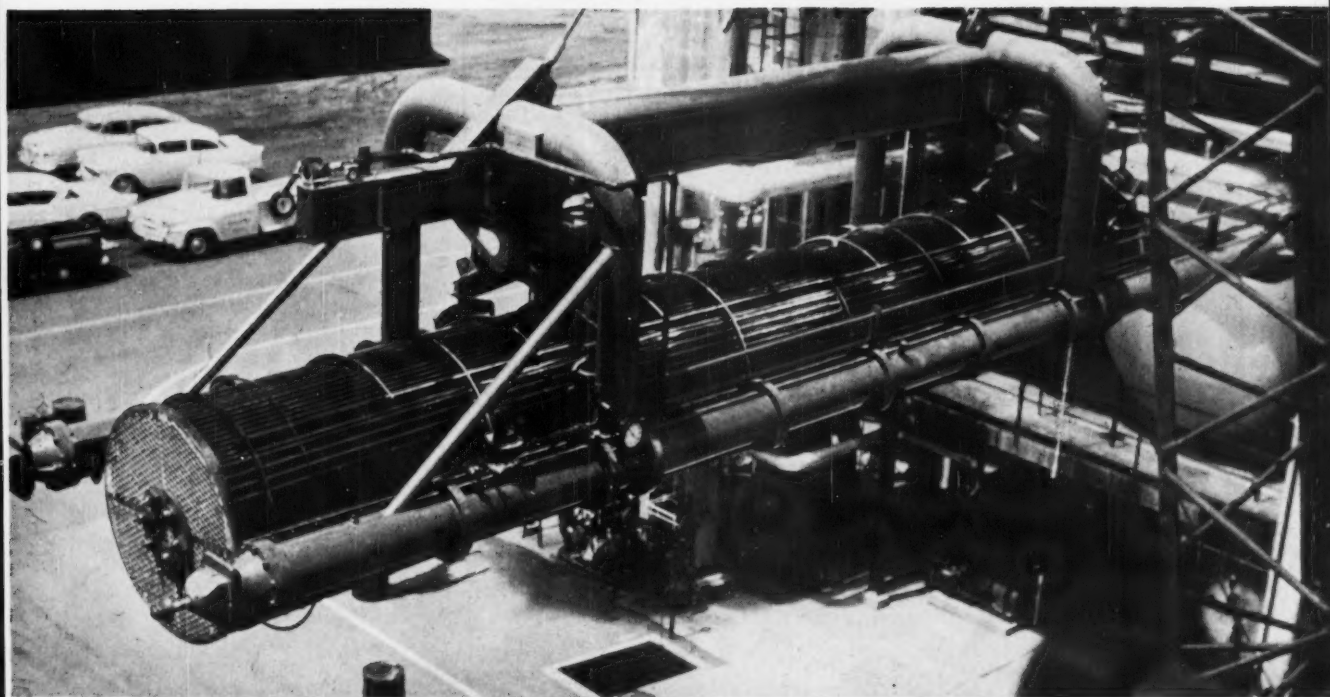
"If *all* these elements of the sales plan are carefully evaluated, and the key assumptions are checked regularly, you're off to a strong start in making sure that your advertising appropriations are neither so high as to be wasteful, nor so low as to penalize your marketing effort."



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Bundle-puller extracts heat-exchanger tubes for cleaning. Fouled tubes are today's major cost problem.

## Needed: Better Answers to Tube Fouling

The equipment shown above was developed by the Standard Oil Co. of California to save time and money in cleaning fouled heat-exchanger tubes (CW, Jan. 10, '59, p. 61). Fouling frequently can make the difference between profit and loss in process operation. Last week one of the first all-out attacks on heat-exchanger operating problems was detailed by Aurora Gasoline Co. at the annual conference of Bendix G-15 computer users in Pittsburgh.

Aurora, for a little more than a year, has been using the G-15 digital computer on a part-time basis to analyze data that helps predict heat-exchanger fouling resistance and cleaning cycles.

For most chemical process industries firms, data analysis is a time-consuming manual operation that is seldom done with any degree of completeness or regularity. And the lack of analysis has helped keep the fouling of exchangers a partial mystery that, in many cases, has resulted in the size of units being as much as

25% off in heat-exchange area, according to one design engineer.

An error on the low side means loss of production capacity; one on the high side adds to initial cost, and it may cause operating difficulties. For example, a heat-exchange area that is too large can cause cooling water to boil in the tubes.

**Fouling Factors:** The key to improvement is what heat-exchanger designers call the "fouling factor." In design calculations, the theoretical heat-exchange area is increased to compensate for tube fouling—usually by an amount that is determined from published lists of fouling factors found in TEMA\* standards booklets. Just how these factors were developed is not certain, but it is generally believed they are a result of experience with the materials in question.

Unless a chemical company has gathered data through its own exchanger problems, the TEMA fouling factors represent the best available

\* Tubular Exchanger Manufacturers Assn., a group of manufacturers of various types of shell and tube heat-exchange equipment.

data. "The trouble is, designers often think of the fouling factors as gospel. Our experience shows that this is far from the truth," says one process engineer.

However, gathering more exact fouling data is complex. "You almost have to assign an engineer to stay with the equipment for several months, to do nothing but observe, record process data and take periodic measurements of the fouling deposit on the tubes," says Charles Gilmour of Union Carbide Chemicals' Engineering Dept. in South Charleston, W.Va.

"What many plant operators don't fully realize is that even a momentary change in cooling water rate will affect the fouling data collected," Gilmour adds.

This means that liaison between operating department and exchanger designer must be faultless. And design engineers agree that it is difficult to expect those operating the plant to interfere with production for what is essentially a research assignment.

Smaller companies, such as Aurora,



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*If you have any unusual requirements, let our representatives work with you. For the Foremost-El Dorado Agent in your area, write, wire or phone:*

COCONUT FATTY ACIDS		COCONUT METHYL ESTERS	
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Lauric	Eldhyco*	Caprate	Eldo* 18
Myristic	Coconut	Laurate	Coconate
		Myristate	

\* T. M. Reg.



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FOOD AND CHEMICAL  
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## PRODUCTION

have a much better chance of close liaison—and it is already paying off, says Ralph Sheets, director of planning for Aurora. The data being fed from the operating departments at Aurora's two Michigan refineries is now using close to 10% of computer time, may eventually reach 20%, Sheets estimates. It has shown that the fouling factors used in one case for exchanger design were definitely off. And it is telling the operating departments when exchangers should be cleaned so that fuel economies of the processes can be improved.

Some exchangers, Aurora has found, foul rapidly for a time, then go through an extended period in which no further fouling occurs. Without analysis of the data, these exchangers might have been cleaned at an uneconomical time.

Carbide's Gilmour points out that velocity is a critical factor. If flows through exchangers can be increased sufficiently they will actually help to cut fouling. For example, in one plant process the cleaning cycle was increased from 2-3 months to 2 years by increasing velocity from 2-3 ft./second to about 10 ft./second.

But velocities can't always be counted on to offer appreciable improvement. For example, Alfred Mueller of Du Pont's Engineering Dept. points out that with some materials polymer formation in the tubes still results in fouling.

Mueller suggests that fundamental research on factors such as velocity, viscosity, solids content and particle size is needed. Another factor is the surface finish of the exchanger tubes. Who would carry out such research is the question, but a number of exchanger designers agree that it is needed.

Heat-exchange consultant Donald Kern takes a somewhat different approach to fouling. He says that plants should be designed to run dirty. This would cut down on process turn-arounds, one of the biggest costs in plant operation because it means a loss of product as well as high maintenance labor cost.

Exchanger designers at some chemical companies agree with Kern—up to a point. They aren't entirely sure that all the terms that Kern says should be made variable for continuously changing conditions could be determined satisfactorily. "You get



## PARAPLEX G-60 and G-62...the first oil epoxide vinyl plasticizers accepted for food packaging

PARAPLEX G-60 and G-62 have been widely used in vinyl film for packaging for nearly five years, and were originally accepted by the Food and Drug Administration and the Meat Inspection Branch, Department of Agriculture for food packaging on the basis of a two-year series of extensive feeding tests conducted at the Medical College of Virginia.

Film plasticized with PARAPLEX G-60 and PARAPLEX G-62 is ideal for packaging almost all foods, including meats, lard, fats and oil-containing foods which may tend to leach out less permanent plasticizers. In addition, very low levels of taste and odor make these plasticizers ideal for vinyl packaging materials used in preparing foods for storage.

Resistance to discoloration in high temperature vinyl processing is another benefit of the extreme stability of PARAPLEX G-60 and PARAPLEX G-62. Write for complete processing information and a description of feeding tests made for food packaging approval.

PARAPLEX is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.



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# PARAPLEX G-60 G-62

CHEMICAL WEEK August 20, 1960 55



## "50,000" Europeans Can't Be Wrong, Either!

Actually there probably aren't 50,000 users of mixing equipment in Europe, all together. But it's a big market for Cowles Dissolvers, just the same, with Cowles users increasing rapidly. Here are a few examples of performance—

1. Two major European  $TiO_2$  producers comment that of all the equipment which they have ever tested, the Cowles Dissolver has given them the best results, often obtaining a  $7\frac{1}{2}$  and even a clear 8 on the N.S., or Hegman scale, (0-8).
2. A famous ink manufacturer advises that by predispersing with the Cowles Dissolver, they are able to save several passes on their 3 roller mills as follows: Milori Blue, formerly 6 passes—now 3 passes; Organic Red, formerly 8 passes—now 4 passes; Carbon Black, formerly 3 passes—now 1 pass.
3. In one of Europe's largest paper plants, a Cowles Dissolver deaerates heavy paper coating in 20 minutes, reducing the volume from 1200 liters to approximately 1000 liters.
4. A manufacturer of latex emulsions and oil base finishes reports over 42% production increase with Cowles Dissolvers for high speed dispersions. Batch-to-batch uniformity is improved substantially.
5. A major paint manufacturer produces 3,200 liters of ready ship's oil paint every hour and 20 minutes with his 40 HP 720VHV Super Series Cowles.
6. In another leading plant a 30 HP Model 720 VH finishes 2 ton of acrylic emulsion paint in 40 minutes.

Far from being wrong, more and more European processors say they're RIGHT in choosing Cowles Dissolvers for hundreds of chemical, food, paint and similar products.

You, too, can get greater production in less space, at less cost, with Cowles equipment.

Let us prove it in your plant, at our risk.

Write us today about your problem.



Please send me information on use of Cowles Dissolver in processing (product) .....

Name ..... Title.....  
Firm .....  
Address .....  
City ..... Zone..... State.....

619

## PRODUCTION

right back to the question of fouling factors and how to get really good ones," says one engineer.

Aurora's computer analysis of data is a good start for obtaining better fouling factors. But it is obvious that all companies couldn't follow that approach. How fouling research should be carried out by others is open to question. The only thing that is clear: research is needed and the one function that stands to gain by the research is plant operations.

## EQUIPMENT

**Electrical Conduit:** B. F. Goodrich Industrial Products Co. (Akron, O.) has a new line of rigid Koroseal vinyl electrical conduit that's said to be 60% cheaper to install than metal and fiber conduit. Goodrich suggests it for all types of electrical conduit systems and telephone circuits, particularly in wet and corrosive atmospheres. The conduit is fire resistant, self-extinguishing, won't support combustion. It is available in 20-ft. lengths, can be cut with a handsaw, bent after heating.

**X-Ray Probe:** General Electric's X-Ray Dept. (4855 West Electric Ave., Milwaukee) is offering a new miniature X-ray probe for its line of No. 2 X-ray spectrometers. New attachment permits chemical analysis of objects from 1-mm. to 50-microns diameter, can be used for determining homogeneity of alloys, identifying local impurities and elements in inclusions.

**Infrared Dryer:** Fostoria Corp.'s Infrared Division (Fostoria, O.) is marketing a new portable, caster-equipped infrared heating and drying unit. The unit, designated Model 96-848, is for use with 500-watt lamps. The top four banks of lamps can be adjusted to conform to product contours.

**Nylon-to-Metal Welds:** Plastic Associates (2900 South Coast Blvd., Laguna Beach, Calif.) is out with a new two-step process for joining nylon to metal. The technique uses a treating agent, designated PA-749, for softening the nylon surface, and an epoxy-paste bonding agent, designated PA-708. The operations can be carried out at room temperature, form a tough joint within a few hours.



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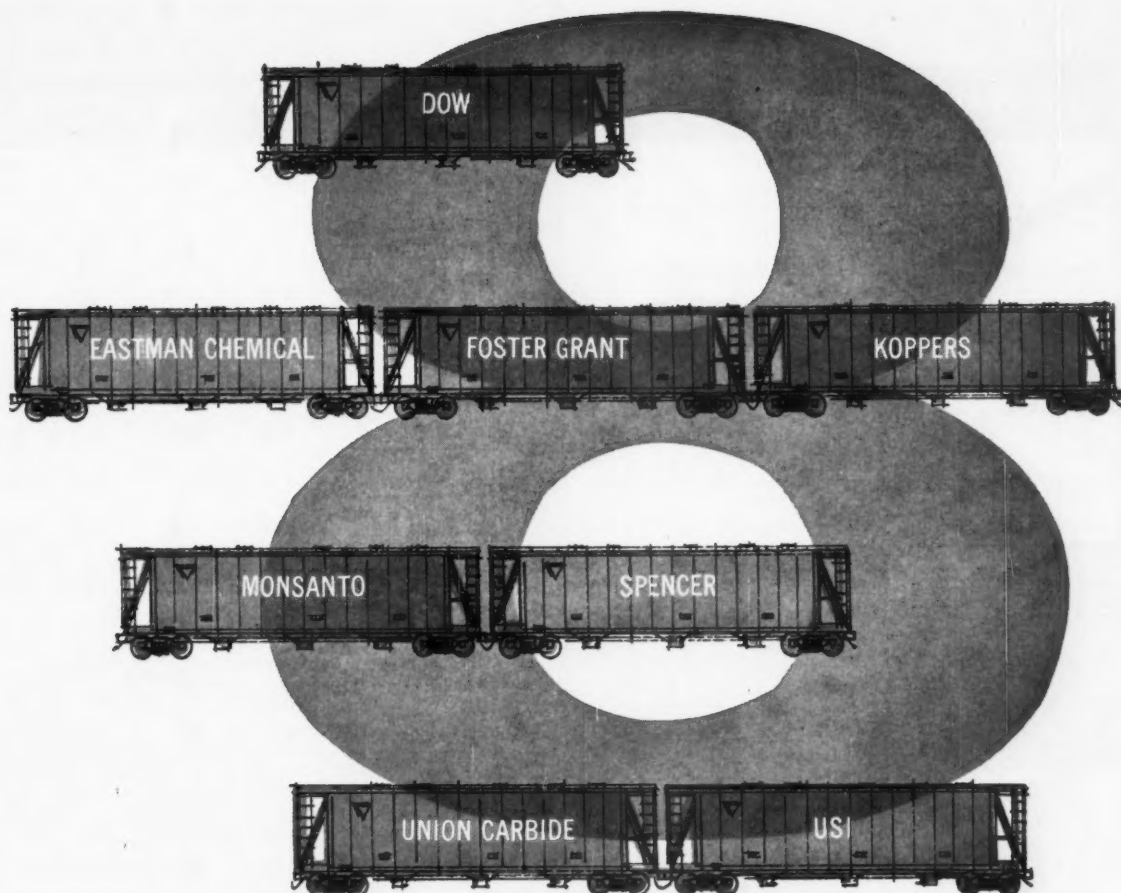
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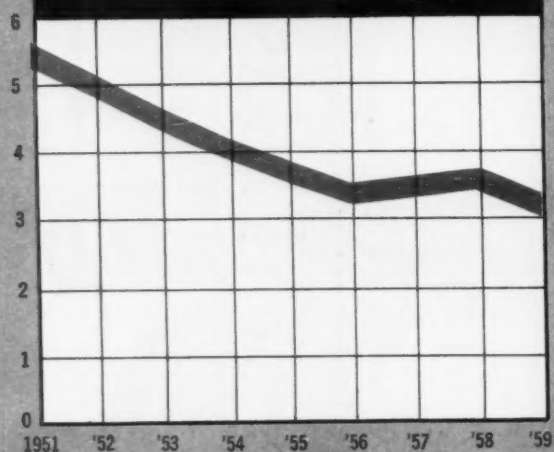


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*Ask the nearest General American office about the advantages of bulk shipment for your product.*



*The Dry-Flo® car provides maximum sanitation and full protection for materials that require careful handling.*

**Accident Frequency\***

\*Frequency rate is number of disabling injuries per 1 million man-hours of exposure.

**Accident Severity\*\***

\*\*Severity rate is number of days lost per 1 million man-hours of exposure, including charges for permanent disabilities and deaths.

Chemical Process Industries	Accident Frequency* 1958	Accident Frequency* 1959	Accident Severity** 1958	Accident Severity** 1959
Acids	4.29	4.85	663	1,798
Alcohol and wood distillates	7.38	9.00	357	7,854
Chlorine and alkali	4.33	3.74	695	205
Coal-tar products	4.65	5.56	1,048	1,032
Fats and oils	10.85	10.33	1,406	1,571
Fertilizers	9.76	10.60	1,572	1,693
Fuses and powder	2.30	2.23	129	124
High explosives	2.39	2.10	1,379	1,784
Industrial gases	7.61	6.98	736	1,242
Laboratories	1.40	1.41	73	95
Paint and varnish	4.11	4.09	216	163
Pharmaceuticals, fine chemicals, cosmetics	4.28	3.22	473	498
Photographic film	1.15	1.74	141	283
Plastic materials	2.13	1.99	474	93
Salt	13.74	13.48	2,514	1,471
Soap and glycerine	2.36	3.65	472	183
Synthetic fibers	1.32	2.35	265	315
Synthetic rubber	1.75	1.85	1,068	1,505
<b>All chemical process industries</b>	<b>3.56</b>	<b>3.32</b>	<b>552</b>	<b>495</b>

## Chemical Plants: Safer than Ever in 1959

After a two year drift, the chemical industry's safety performance improved last year, according to National Safety Council (Chicago) figures now available for '59 (see table above).

The accident frequency record of 3.32 (measured by the number of disabling injuries per million man-

hours worked) set a new low for the 18 segments of the industry tabulated by NSC. The best previous record, 3.38, was set in '56.

Accident severity rate (measured by the number of days lost per million man-hours worked) dropped to 495 in '59, but did not better the 462 mark set in '56.

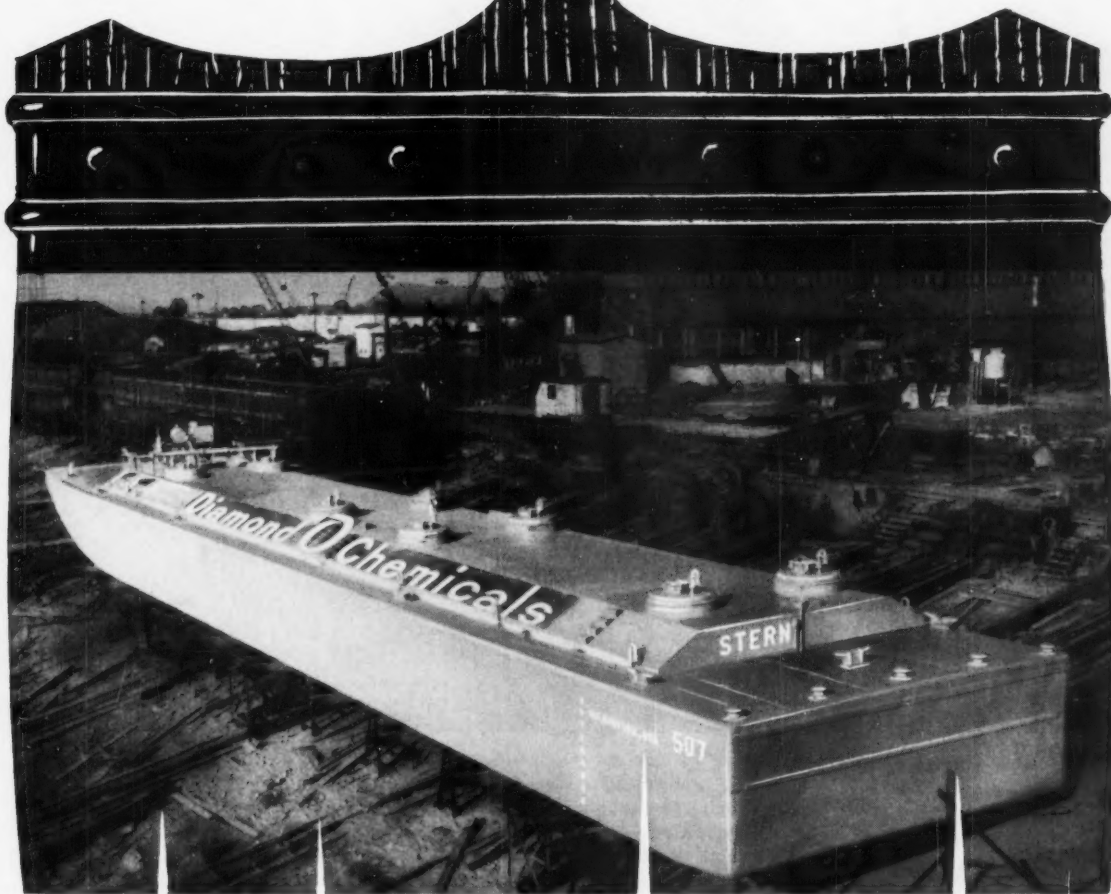
Compared with other industries, the chemical industry stood sixth lowest in accident frequency rate, but only 16th in severity rate. The only chemical process industry to better the chemical segment in frequency rate was the rubber industry, with a 2.49 mark; in severity, rubber (337) and glass (429) topped chemicals.

# Keep "Shipshape" with Parlon® Based Paints

Any sailor can tell you the best way to keep his ship in condition . . . *Paint it!!*

Diamond Alkali Company also knows that paints based on Parlon chlorinated natural rubber made by Hercules are fast drying, tough, nonflammable, and resistant to alkalis, acids, chemical corrosion, and salt spray.

All paints specified in the construction of this modern chemical barge had to be Parlon-based to resist the rotting effects of salt spray and corrosive cargoes. There are Parlon-based paints to suit every unusual condition. For more information write:



Cellulose Products Department  
**HERCULES POWDER COMPANY**

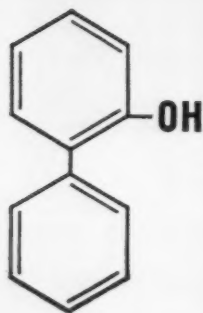
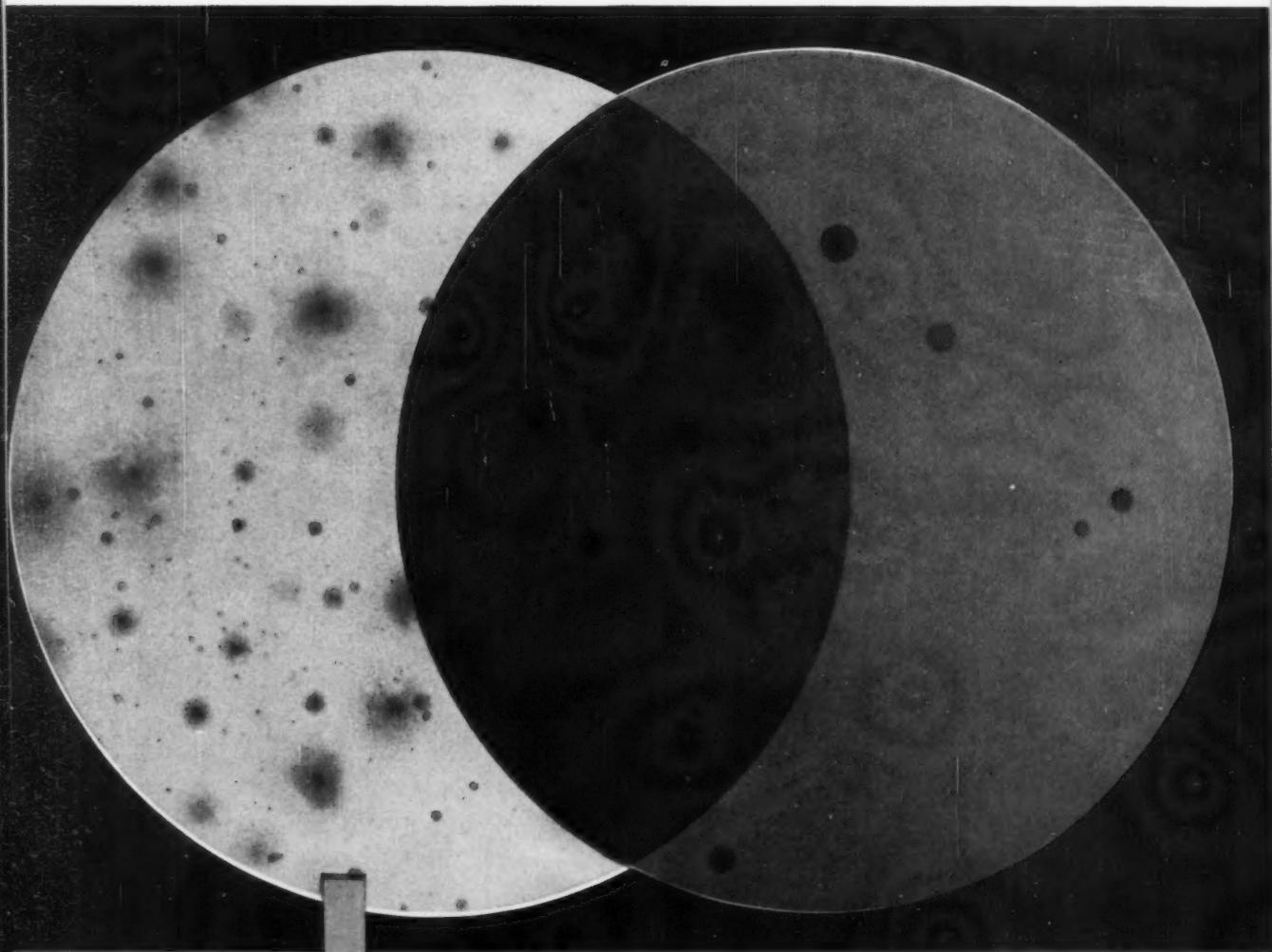
INCORPORATED  
900 Market Street, Wilmington 99, Delaware

CR60-3



# EMULSIFICATION

**EMULSION ADDITIVES** are frequently necessary to preserve the desired emulsion characteristics. The leading emulsion problems controlled with additives are decomposition resulting from bacterial or fungal growth, and instability or undesirable color effects due to trace metal ion contamination.



**MOST EMULSIONS** contain materials which support the growth of bacteria or fungi. These microorganisms subsist on the emulsion components and produce metabolic waste products, many of them acidic. These waste products react with the emulsion components and decompose important constituents such as emulsifiers, dispersants, coupling agents, soaps, etc., thereby reducing the stability of the emulsion. Since many emulsion formulations are slightly alkaline, the waste acids can also affect the pH which frequently is critical to the stability of the emulsion. Effective control of both bacteria and fungi in emulsions is given by the Dowicide® products, a group of phenolic compounds the simplest of which is o-phenylphenol, Dowicide 1. Broad-spectrum bactericides, the Dowicide products are available with either water or oil solubility.

## BACTERICIDE

### PRESERVATIVE CONTROLS EMULSION BREAKDOWN AND ODOR PROBLEMS IN SOLUBLE OIL EMULSIONS

Dowicide A (sodium o-phenylphenate) has a long history of success as a preservative in soluble oil emulsions. Effective control of odor-causing bacteria and stability protection make it a valuable additive for metalworking cutting oils where contamination, odor, and corrosion are particular problems.

The concentration of Dowicide A that is generally necessary to preserve the emulsion is between 0.10 and 0.15% based on the total weight of the emulsion (water and oil). A practical method of attaining this concentration is to add 1 pound of Dowicide A to 100 gallons of emulsion (0.12%). This concentration will normally prevent emulsion breakdown and odor formation over an extended period even when machines are not operating. Bacterial protection is needed throughout the system. Badly contaminated systems should be cleaned and disinfected before treatment with Dowicide is started.

Latex paints, cosmetics, adhesives, and many other emulsion systems subject to organism attack are protected by treatment with Dowicide products. Full information on specific applications are available from Dow.

#### ADVANTAGES OF ADDING DOWICIDE TO AN EMULSION

- Emulsions protected from bacterial decomposition
- Bacterial population held to a minimum
- Useable life of emulsion is extended
- pH of emulsion is not reduced
- Obnoxious odors prevented
- Discoloration due to organisms prevented
- Slime and sludge formation reduced
- Reduced corrosion due to bacteria acid in metal contact operations
- Reduced dermatitis caused by bacteria

## CHELATING AGENT

### INACTIVATION OF TRACE METAL IONS PROTECTS STABILITY OF OIL, WAX, AND LATEX EMULSIONS

Versene® chelating agents added to aqueous emulsions are effective in preventing emulsion breakdown, rancidity, discoloration and coagulation. The Ca and Mg hardness ions affect stability, and Cu, Ni, Mn and other metallic ions can catalyze oxidation, which may lead to rancidity, discoloration, and coagulation. The amount of Versene necessary to stabilize aqueous emulsions depends on the hardness of the water used. Usually the Versene is added in a concentration of 0.05-0.2% by weight. Versene should be added as a 5-10% aqueous solution in order to avoid too heavy local concentration and possible emulsion breaking. The pH of the solution of Versene should be adjusted to that of the emulsion prior to addition.

In latex stabilization, Versene will prevent decomposition, precipitation, sludge formation, and putrefaction. Trace metal ions are complexed and their destructive influences are eliminated.

**STABILIZATION OF AQUEOUS RESIN EMULSIONS.** Traces of metal-ion contamination in aqueous resin emulsions frequently cause premature settling and instability. Also, in many systems, particularly those based on phenolic resins, traces of iron impart high, undesirable color levels through the formation of iron-phenolate-type complexes. Controlling these metal ions with chelating agents results in emulsions with improved shelf life and greater stability. The use of 0.5-1.0% of Versenex® 80 is usually sufficient to control color.

The Dow Chemical Company, Midland, Michigan  
Chemicals Merchandising Dept. 427AMB-20.

☐ For information on Dowicide products, ☐ "Keys to Chelation" Booklet

please specify application \_\_\_\_\_

Name \_\_\_\_\_

Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_

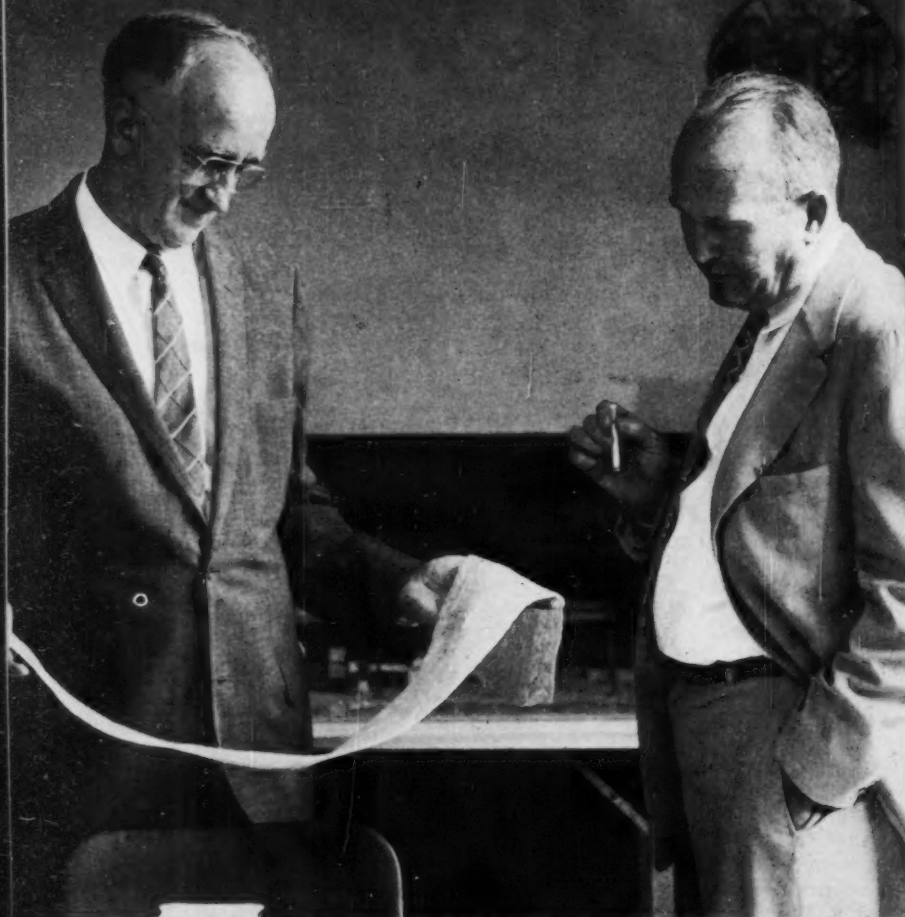
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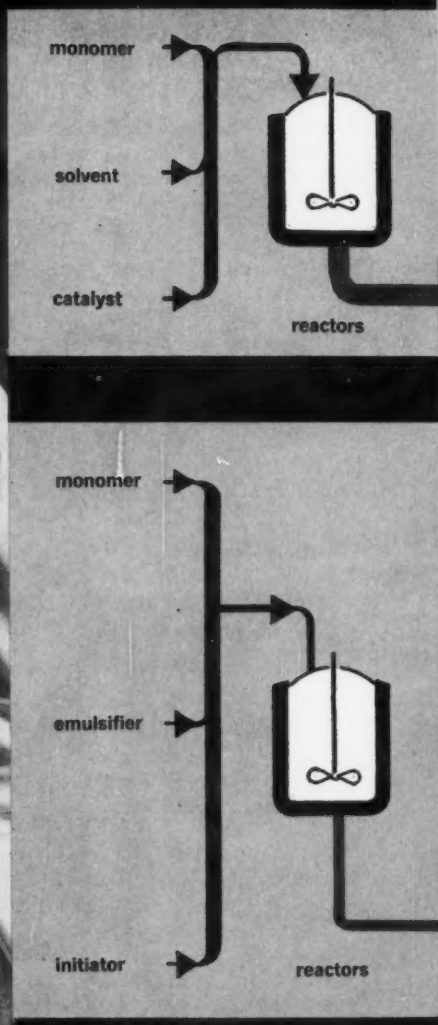
THE DOW CHEMICAL COMPANY

Midland, Michigan

C&R's Beal (left) and Crawford inspecting a strip of rubber made in desolventizer test run.



CW PHOTO—MORT SCHREIBER



## Bypassing the Crumbs Boosts

Last week a new synthetic rubber process—which its inventors hope will revolutionize synthetic rubber production—was put through its paces in a pilot plant of Crawford & Russel, Inc., a Stamford, Conn., engineering firm.

The new method is based on an elastomer-solvent system, bypasses crumb-type coagulation of conventional emulsion processes. Performing smoothly in the pilot plant (200-lbs./hour capacity), the process is looking

for its first commercial application.

Economic importance of the process is underscored by C & R claims that it can save about \$17/annual ton in investment costs and about ½¢/lb. in operating costs, compared with those of existing processes (*CW Technology Newsletter*, Aug. 13).

C&R co-inventors Carl Beal and James Crawford say that nothing like their process is in use in present styrene-butadiene and butyl rubber operations, both of which produce

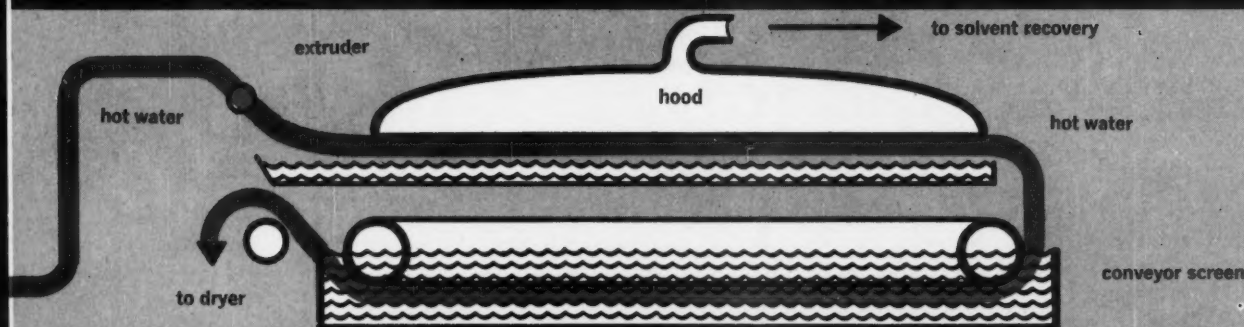
crumb rubber rather than a continuous rubber sheet.

The firm has applied for patents; and although it has not yet lined up a customer, it's now designing equipment for a plant with a capacity of 30,000 tons/year.

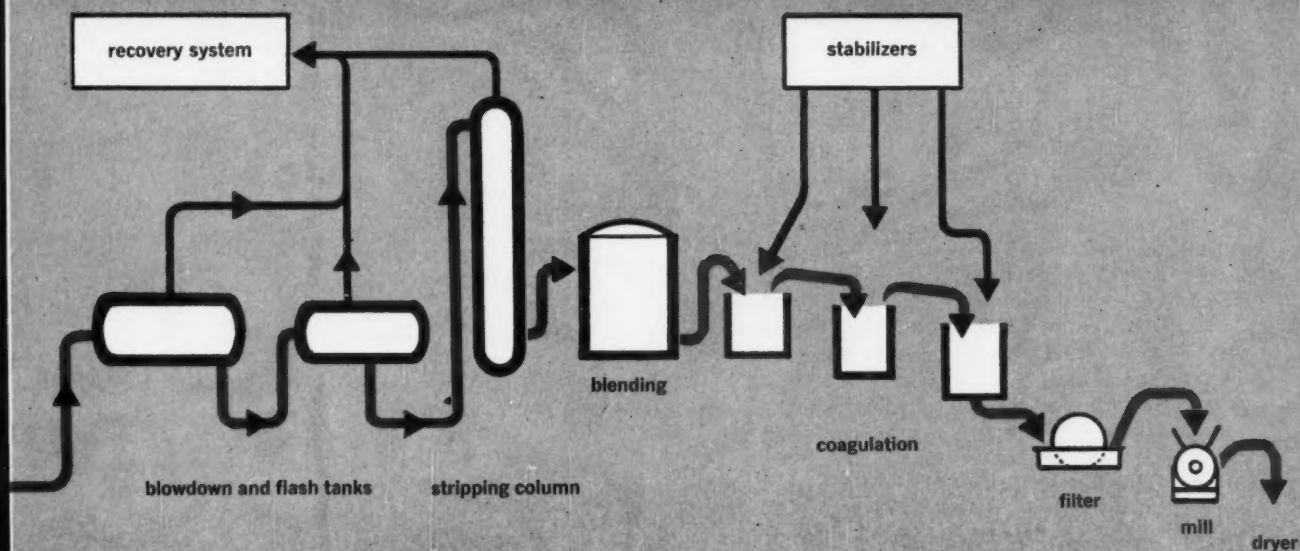
In addition, C&R is rapidly building up technical knowledge for future design use on polymer solutions having viscosities up to 500,000 centipoises. Rubber manufacturers are sending in sample drums of raw



## One-step 'desolventizer' unit does same job as ...



## SBR process, which turns out about 70% of the nation's rubber.



# Synthetic Rubber Process Payoff

polymer as it comes out of their reactors. C&R runs these through the pilot plant, studies operating problems.

**Old Pros:** Both inventors (*see picture*), veterans of the rubber industry, are convinced their system has a place in rubber-making. Beal worked for many years with B. F. Goodrich, where he developed the continuous coagulation system for styrene-butadiene rubber, as well as numerous systems for latex manufacturing. He holds 49 patents on various aspects

of polymer development work.

Crawford served on the Rubber Reserve Equipment & Engineering subcommittee, was in charge of waste disposal studies for the standard GR-S rubber plant. He developed the Naugatuck reactor agitator, has designed automatic equipment for GR-S plants.

**Solvent vs. Emulsion:** As a new polymerization technique, the process is in the vanguard of those challenging established emulsion methods. Biggest difference between the two systems:

solvents, which keep the rubber fluid in the polymerization reactor, instead of a water and soap mixture, which suspends the rubber particles as colloids.

The Beal-Crawford process reacts monomers such as isoprene in a suitable solvent (choice of solvent depends on the rubber to be produced). The specially designed reactor has several concentric internal jackets through which coolant is circulated for temperature control. By use of forced

circulation between the jackets and continuous scraping, the heat of reaction is removed to the point where the effluent contains about 20% polymer—3-4 times that obtained from conventional styrene-butadiene (SBR) rubber reactors.

This effluent, a thick, extremely viscous substance (like rubber cement), is then pumped directly to a sparger, which extrudes a row of gummy strings onto the surface of hot (200 F) water flowing through a channel. The hot water strips out the solvent, which is picked up by suction into a hood over the channel and sent to a recovery system for recirculation. At the same time, the rubber threads stick together to form a thin sheet, which is picked up by a continuous screen-belt as it overflows at the end of the channel. The screen-belt carries the continuous sheet of raw polymer around, under and back through a second water bath, where it is submerged, held up against the screen by its buoyancy, to remove the last traces of solvent.

The continuous sheet leaving the hot water bath is picked up by a second conveyor belt and carried through a dryer. Since the polymer sheet carries much less water than the crumbs (only 10-12%, compared with 30-40%), the drying job is simpler. An the sheets leave the dryer ready for cutting and baling.

Beal says that he uses many different techniques for forming the sheet, depending on the specific characteristics of the polymer. The process has been operated with polyisoprene, polybutadiene and ethylene-propylene rubbers.

**Doing It Conventionally:** The conventional emulsion method is more complicated, requires extra steps. Typical of the emulsion methods is the "cold" rubber process currently used to make about 1.2 million tons/year of SBR rubber, or about 70% of the total U.S. production. In this technique, butadiene (75%) and styrene (25%) are fed, along with a water solution of emulsifiers and catalyst, into a series of reactors. The reaction takes place at 41 F. The latex from the reactor train goes first to a flash tank for removal of unreacted butadiene and then to a vacuum-stripping tower for recovery of unreacted styrene.

The latex leaving the vacuum-

stripping tower is pumped first to a latex-blending tank and then to a coagulation section, where the fine particles are formed into pea-size rubber crumbs. The wet rubber crumb is isolated by rotary vacuum filters or vibrating screens until the water contents is reduced to 30-40%, then passed through a tunnel dryer at 200-250 F to remove the water. A new alternative drying method is the use of an extruder-dryer (*CW*, July 16, p. 39).

The product from the dryers is then sent to large mills, where it is compounded, rolled into strips and baled for shipment.

Large-scale compounding (e.g., for tires) to a single formula is usually done while the rubber is still in the latex form.

**Simple and Sound:** The system appears so simple and so sound in principle that it raises the obvious question—Why hasn't it been done before?

The answer lies in the type of products handled—"stereoregular" polymers. These are the new elastomers (*CW*, July 23, p. 35) that are bidding for an important place in the rubber industry.

According to latest figures the stereoregular rubbers have about tripled their production between '59 and '60; about 35,000 long tons were produced in '60. They, like natural rubber, are characterized by polymer molecules with regular special arrangements, compared with styrene-butadiene rubbers, whose molecular structures vary.

**The Future:** Most of the cold-SBR rubber plants currently in operation were built between '48, when the process was first made commercial, and the early '50s. They're now about 10 years old, have at least another 10 years of life left. (The rest of the U.S.'s synthetic rubber capacity dates from World War II and is becoming obsolete.)

Solvent-rubber plants are not expected to win out in competition with existing SBR plants. But statistics compiled by the Rubber Manufacturers' Assn., show that U.S. synthetic rubber capacity will grow from the present 1.7 million annual tons to about 2 million tons in '70. This 300,000 tons/year growth probably will call on the newer stereoregulars, with a good share likely to be produced by processes like the Beal-Crawford.

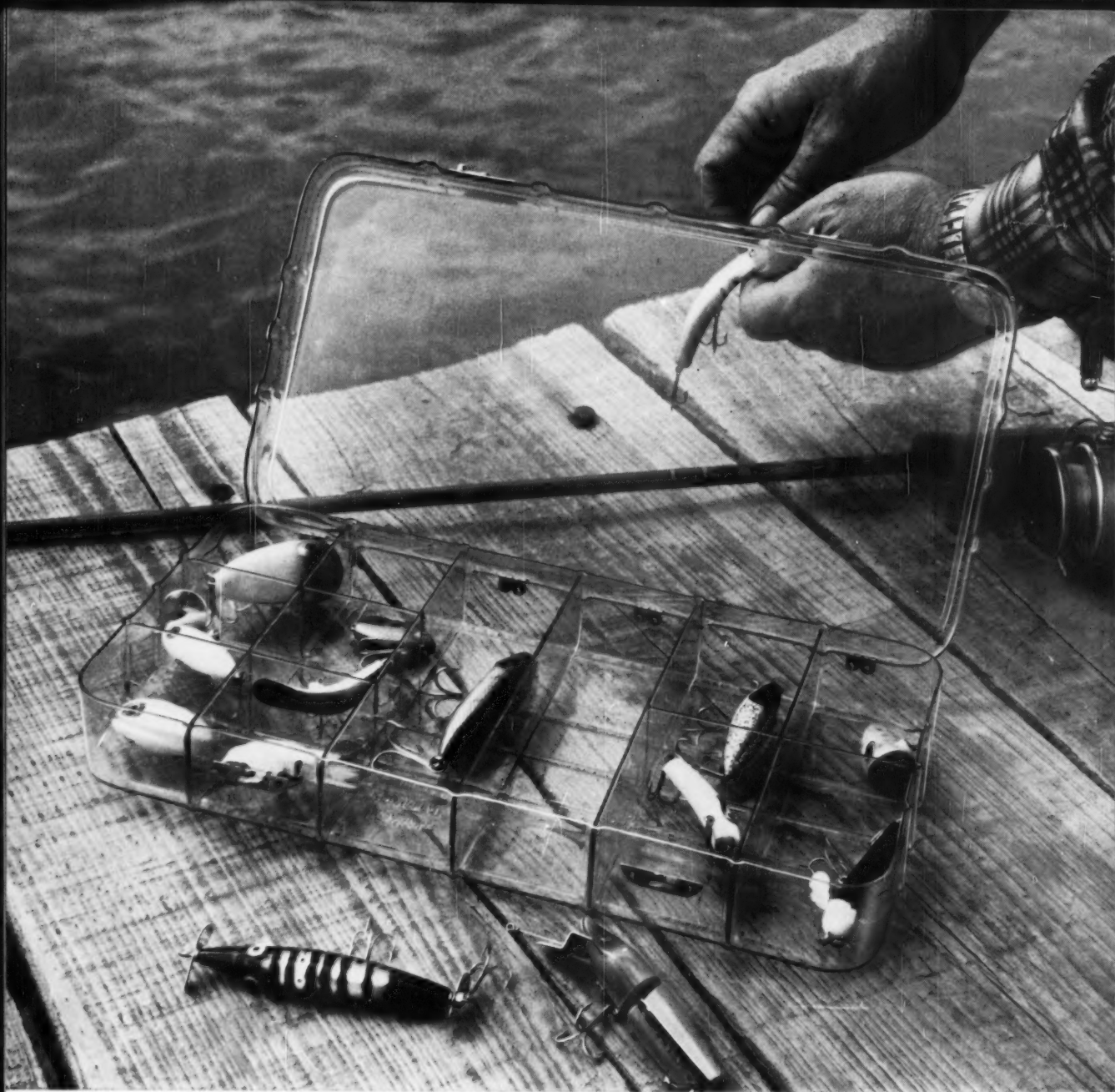
## PROCESSES

**Hydrogen Sulfide Removal:** East Germans are using limonite, a low-grade iron ore often found mixed with magnetite and clay, to remove hydrogen sulfide from fuel gas streams. Feed streams containing 15 grams/cubic meter of hydrogen sulfide are reportedly purified to less than 20 milligrams/cubic meter. During the absorption, ferric hydroxide in the limonite is converted into ferrous sulfide and water. Air-blowing regenerates hydroxide. The process will be used in a plant currently under construction, which will handle 8.5 million cu. ft./day of gas. This unit uses six towers operating in parallel, each 53 ft. high and 8.5 ft. in diameter, with 10 trays of limonite suspended inside. Operating pressure will be 150 psig.

**Titanium Recovery:** A new process that utilizes the first helium-cooled vacuum arc-melting furnace to recover titanium scrap has been developed by National Research Corp. (Cambridge, Mass.). The process steps: (1) arc melting of the initial crucible charge under an argon atmosphere using four permanent thoriated tungsten electrodes; (2) insertion of additional titanium charge in 50- to 100-lb. lots, as needed, through a charging unit; (3) arc melting under vacuum to remove hydrogen and other dissolved gases that do not form stable compounds with titanium; (4) use of a fifth permanent tungsten electrode to melt the solid metal in the crucible lip prior to pouring.

National Research claims a safety advantage for its helium cooling system over water cooling, points to the potential danger of titanium reacting explosively with water, should a mechanical failure occur inside the furnace jacket. The melt may be poured into ingot or shape castings.

**Metal Recovery:** Metal manufacturers plagued with fines such as brass, zinc, nickel, gold and naphthalene in their effluent wastes can now recover them in a process developed by Denver Equipment Co. (Denver, Colo.). Key steps: (1) crushing and grinding; (2) ball milling with a special spiral screen; (3) classification in another spiral screen; (4) flotation; (5) separation in a gravity table.



## Fishing for customers?

*Cellulose makes many products more alluring*

Buckeye doesn't manufacture these plastic piscatorial charmers, nor the strong, lightweight tackle box. We don't even make the plastic from which they were molded.

Buckeye's business is getting such products off to a good start . . . by supplying high alpha cellulose, for acetate, butyrate, propionate, and other cellulose molding materials. Quality of the

cellulose naturally affects quality of the finished product. Buckeye's high purity and special types of cellulose contribute the desired clarity, stability, strength, flexibility and other characteristics to modern plastics.

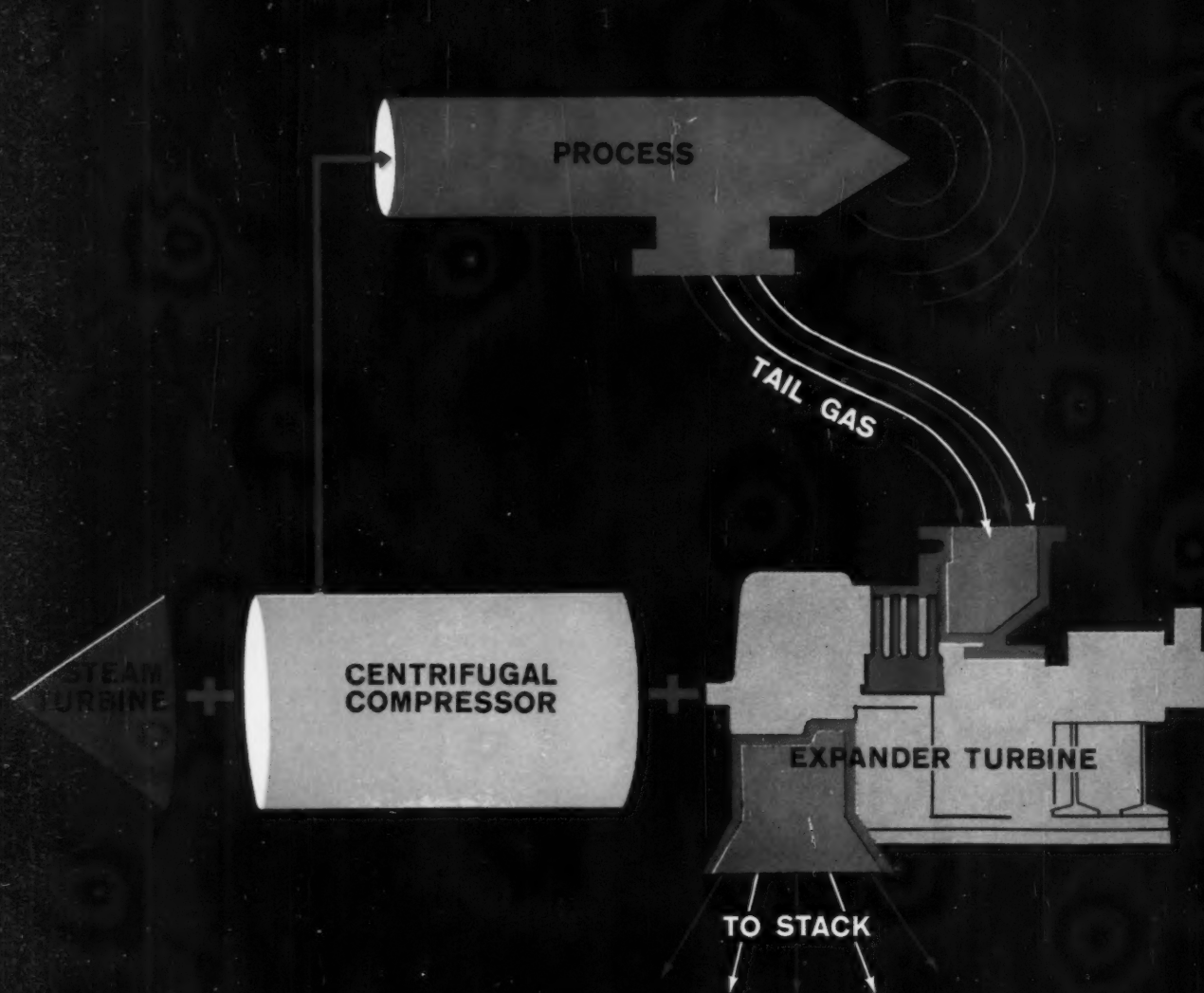
If you're fishing for customers, a cellulosic may be the lure to use. For 40 years Buckeye has worked closely with the plastic, textile, film and paper in-

dustries . . . helping to improve existing products and develop entirely new ones. Quality cellulose start with Buckeye pulp. For creative technical assistance plus high purity celluloses from both cotton linters and wood, call or write us.

**BUCKEYE CELLULOSE CORPORATION**  
Cotton linters plant at Memphis, Tenn.—Wood pulp plant at Foley, Fla.

**Buckeye**   
 **first in  
cellulose**





# TAIL GAS WAGS PROCESS, SAVES $\frac{2}{3}$ 's POWER COSTS

In less serious moments we call it "tail-wagging." Actually, it's the art of taking substantial amounts of power from process exhaust or "tail" gases. By making the tail wag the dog . . . putting this power back into the process . . . major increases in efficiency can be obtained.

The key machine is the turbine gas expander that returns power to the process by serving as a prime mover. In one process, for example, a centrifugal compressor delivers air to the process. After reaction, in which the oxygen is removed, the residue or "tail" gas leaves the process at extremely high temperatures and under

pressure. Passed through a turbine expander, this gas does useful work.

This work can be applied to driving generators, blowers or geared to reciprocating equipment. If used driving a centrifugal compressor, it can supply as high as 85% of the driving power. An auxiliary motor or steam turbine can provide the make-up and start-up power.

Recent developments in design, materials and manufacture have now made "tail-wagging" with high horsepower, high temperature turbine gas expanders possible for a variety of processes. At Worthington we have answers you need to make a com-

plete study of this new opportunity for process plant economy. For information about "tail-wagging" (turbine gas expanders and their application) please write Worthington Corporation, Expander Section (48-10), Wellsville, New York.



# Technology

## Newsletter

CHEMICAL WEEK

August 20, 1960

**Anodic protection against corrosion of process equipment** is now ready to go commercial. Continental Oil Co. (Houston), which developed the technique and has been using it in the plant for more than a year, has licensed Minneapolis-Honeywell to make and market the system. M-H's Rubicon Division (Philadelphia) will sell it under the name Anotrol.

Anodic protection, based on the use of electric current to build up and maintain a protective oxide film on metal, is a well known laboratory technique. But until Conoco developed its patent-applied-for Anotrol system, no one had come up with the precise current control needed for commercial applications. Conoco's system permits less expensive mild and alloy steels to be used for corrosive chemicals such as sulfuric, phosphoric and nitric acids, sodium and potassium hydroxides.

**Ethylene has been pinpointed** as the auto-exhaust component guilty of damaging greenhouse flowers in the San Francisco Bay area. Concentrations as low as 10 parts per billion injured orchids in tests at the University of California (Riverside). Air pollution damage to orchids caused '59 losses of \$55,000 to an Alameda County grower, \$13,000 to a San Mateo County grower. Unlike other auto-exhaust smog-formers, ethylene does not cause eye irritation and need not be acted upon by sunshine to damage plants. Charcoal filters containing bromine are being tested as a means of keeping the greenhouses free of ethylene.

**Studies on production of oil from coal may be abandoned** in the United Kingdom if the recommendations of a British government committee are followed. Investigations show that a successful design would require \$30-60 million for research and development, that the cost of a plant processing 1 million long tons/year of coal would now cost \$70-100 million, and that its operating costs would be about \$20 million for \$17-million revenue.

Significant reductions in cost of coal gasification are believed possible, however, through use of high-pressure slagging gasifiers and Lurgi complete gasification plants. About \$6 million will be needed to carry this project to completion.

**An anti-tooth-decay additive for sugar and candy** is being studied under a National Institutes of Health (Bethesda, Md.) grant to Leonard Fosdick, chemistry professor at Northwestern University Dental School (Chicago). Fosdick is in the early stages of research, which is designed to turn up an inhibitor that counteracts the formation of acids that etch teeth, making them vulnerable to decay. He believes the inhibitor

# Technology

## Newsletter

(Continued)

might involve enzyme or enzyme-destroying materials. Observers call the market potential "enormous."

NIH also reveals it is conducting clinical tests on the addition of calcium phosphate to bread. A three-year clinical test involving children at eight Midwest boarding schools using calcium phosphate added to flour is now under way. Teeth are believed to mature more rapidly in contact with the phosphate, staving off decay.

•  
**Union Carbide's apparent interest in polycarbonates** is underscored by its Australian patent application 56,684/60 for "a process for the preparation of substantially linear, thermoplastic polycarbonate resin . . ." The process calls for reaction in an alkali metal of phosgene with a di-(monohydroxyphenyl)-substituted aliphatic hydrocarbon in which both hydroxyphenyl groups are attached to the same carbon atom. Union Carbide Plastics is already in production of bisphenol-A, which might be used in making polycarbonate as well as epoxy resin.

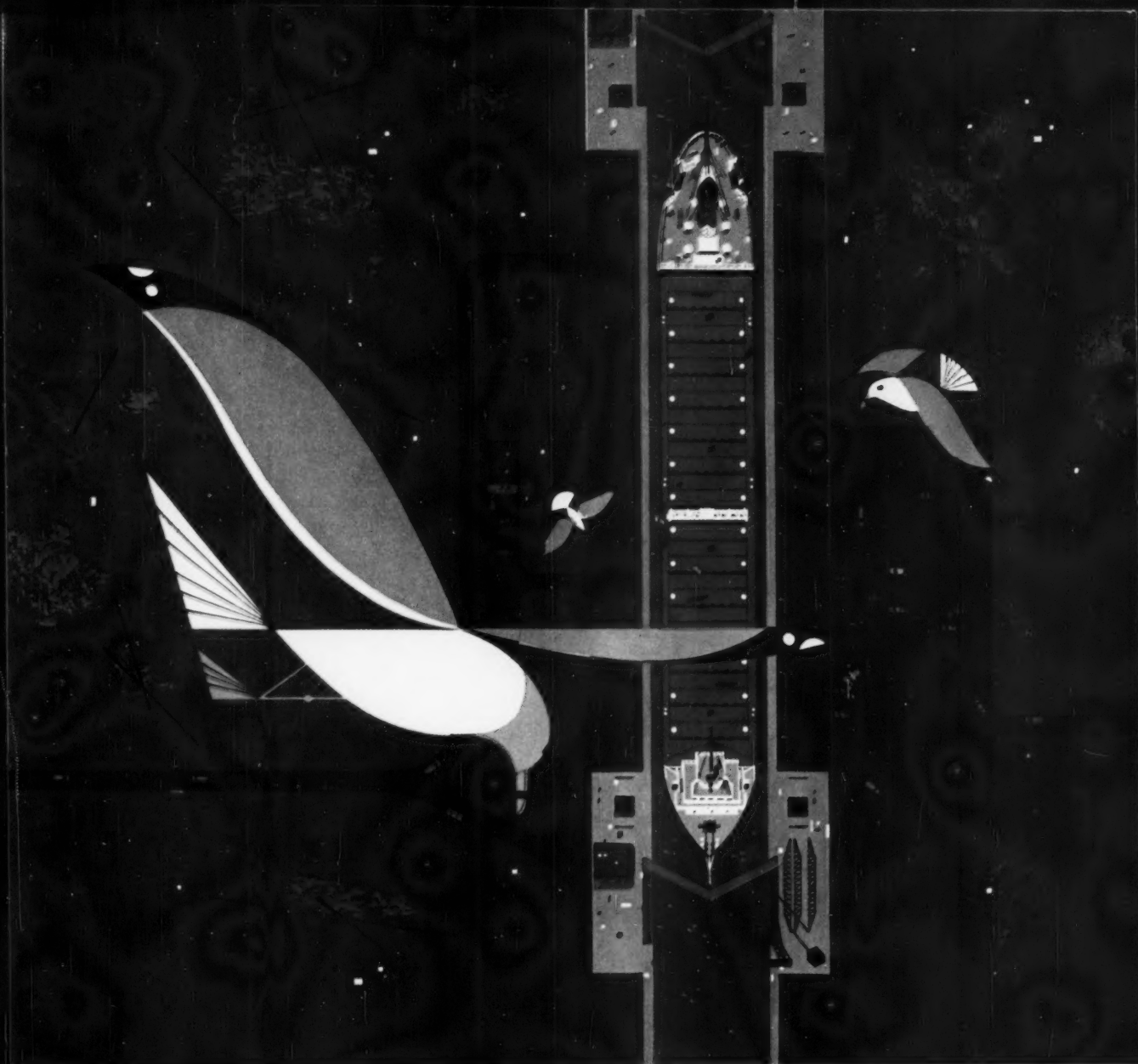
•  
**Oxygen is bidding for use in copper production.** Oxygen smelting of copper will be tested in a \$750,000 pilot plant planned by Kennecott Copper Corp. at its Garfield, Utah, plant. Kennecott discloses it has been carrying out studies of oxygen smelting for some time at its Salt Lake City research center and at its New Mexico smelter. Anaconda Copper Co. is also reported testing oxygen smelting at its Anaconda, Mont., smelter. No details of savings or oxygen consumption are yet available.

But Union Carbide's Linde Co. division, which won't discuss details, has been working with all major copper producers for more than a year, says the development parallels the one in steelmaking (*June 15, '57, p. 92*). And Air Products, which says it has received inquiries from copper producers, points out that copper producers use oxygen in two ways: (1) the oxygen lance is used for removing impurities, mainly sulfur; (2) oxygen is used for combustion enrichment at the burner to produce more furnace heat in shorter time. A smelter "heat" commonly takes 24 hours; but if operating troubles develop, casting must be postponed, delaying production. Air Products sees combustion enrichment as effective in speeding the heats, keeping casting on schedule.

•  
**Hydrazine can be produced cheaply** from ammonia via nuclear energy, according to Aerojet-General Nucleonics (San Ramon, Calif.). Test equipment for pilot-plant production is now being installed with in-reactor operation scheduled for early fall. If successful, the new process may be able to produce hydrazine for 50¢/lb., compared with the current reported price of \$2.12/lb.

The process will probably use uranium dioxide to provide a fission-chemical reaction in liquid phase (*CW, Dec. 19, '59, p. 74*); it will be run at pressures high enough to keep anhydrous ammonia liquefied. AGN believes the process will be in commercial use in four to five years.





## Only Morton offers salt service to industry everywhere in America

A boatload of rock salt from one of Morton's midwestern mines heads up the St. Lawrence Seaway on its way to an eastern city. This quantity of salt might be used by one chemical manufacturer, or it might be stockpiled by a city for wintertime use in removing ice and packed snow from streets.

Whatever your needs for salt, Morton can fill them: from a bag of high purity evaporated salt to a boatload of rock salt, and any amount in between. For Morton has mines, wells and solar ponds from coast to coast and produces more than 100 different grades of salt for industry. Morton, the only nationwide salt company, also has two or more sources for any grade of salt you might need. This means dependable delivery, even under adverse conditions which might otherwise endanger the continuous operation of your plant.

As a Morton customer, large or small, you'll also find invaluable the technical service help available through Morton salesmen and Morton's ultra-modern salt research laboratory. Any problem pertaining to salt your Morton Saltman personally can't solve can be referred to Morton's laboratory for quick, thorough analysis. This technical help alone may be worth thousands of dollars to you every year.

▲ Salt Sources    ● Sales Offices    ■ Warehouses



**MORTON SALT**  
**COMPANY**  
 INDUSTRIAL DIVISION



110 N. Wacker Drive, Chicago 6, Illinois, Telephone FI 6-1300

## chemicals on the move...

Modern chemistry has created hundreds of new and better formulations to keep pace with America's stepped-up personal needs. For cleanliness, soaps and detergents are measured in billions of pounds each year. Every day brings new chemical specialties to make our lives easier and better.

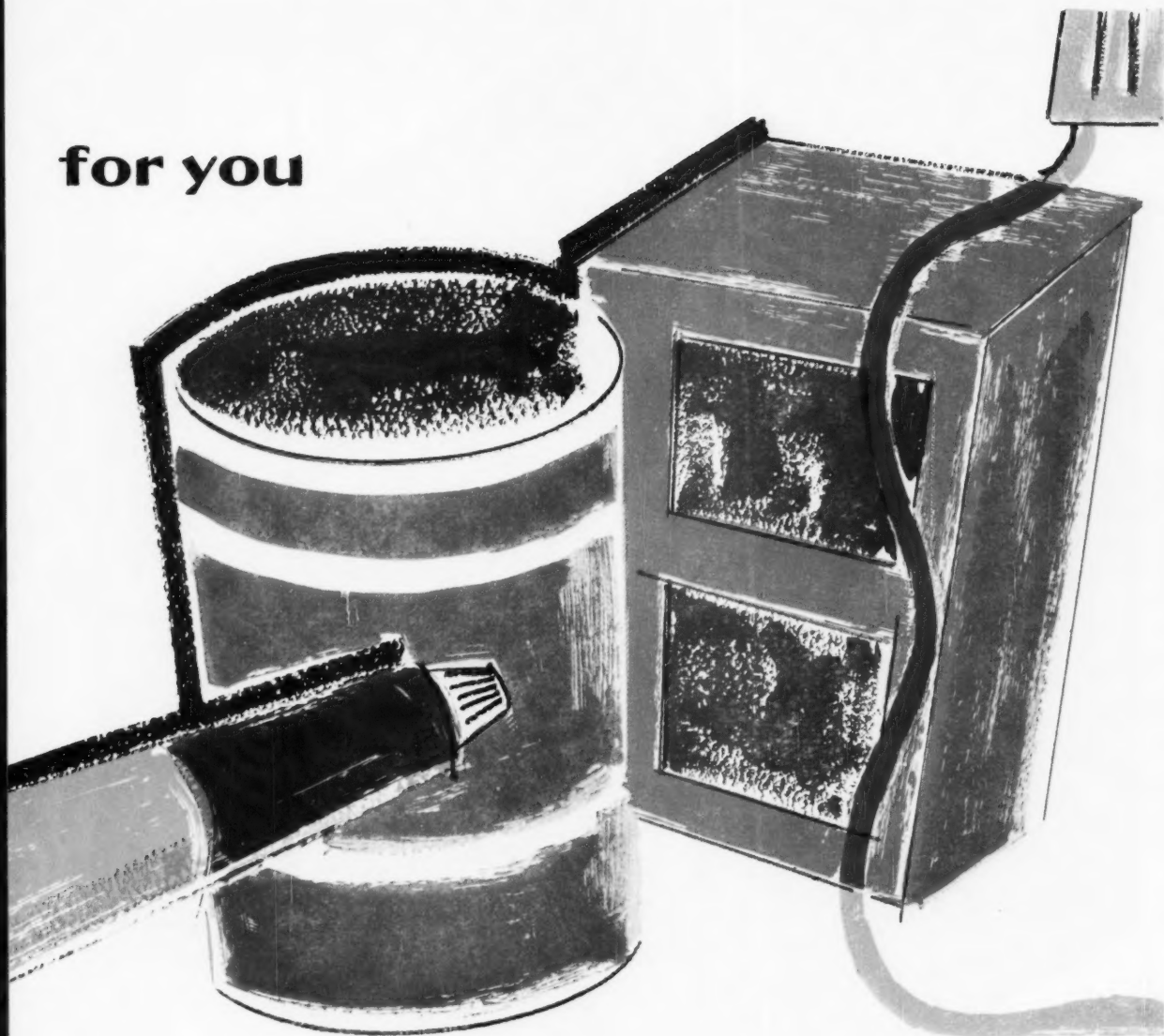
To meet varied requirements of these processors and formulators, Olin Mathieson is on the move. Currently we are increasing caustic/chlorine production in important growth areas—adding new plant facilities for the production of polyols—marketing a

wide range of surfactants of outstanding performance. Olin Mathieson offers quality phosphates, alkalies, organics, and specialty chemicals in volumes to provide for changing market conditions.

Change is the challenge, and the future depends on the ability to predict change and prepare for it. As a step in providing for your future, let us review your chemical requirements now. In terms of future—or present—developments, our experience in chemical supply can be useful.



for you



**Olin Mathieson**

CHEMICALS DIVISION, BALTIMORE 3, MD.



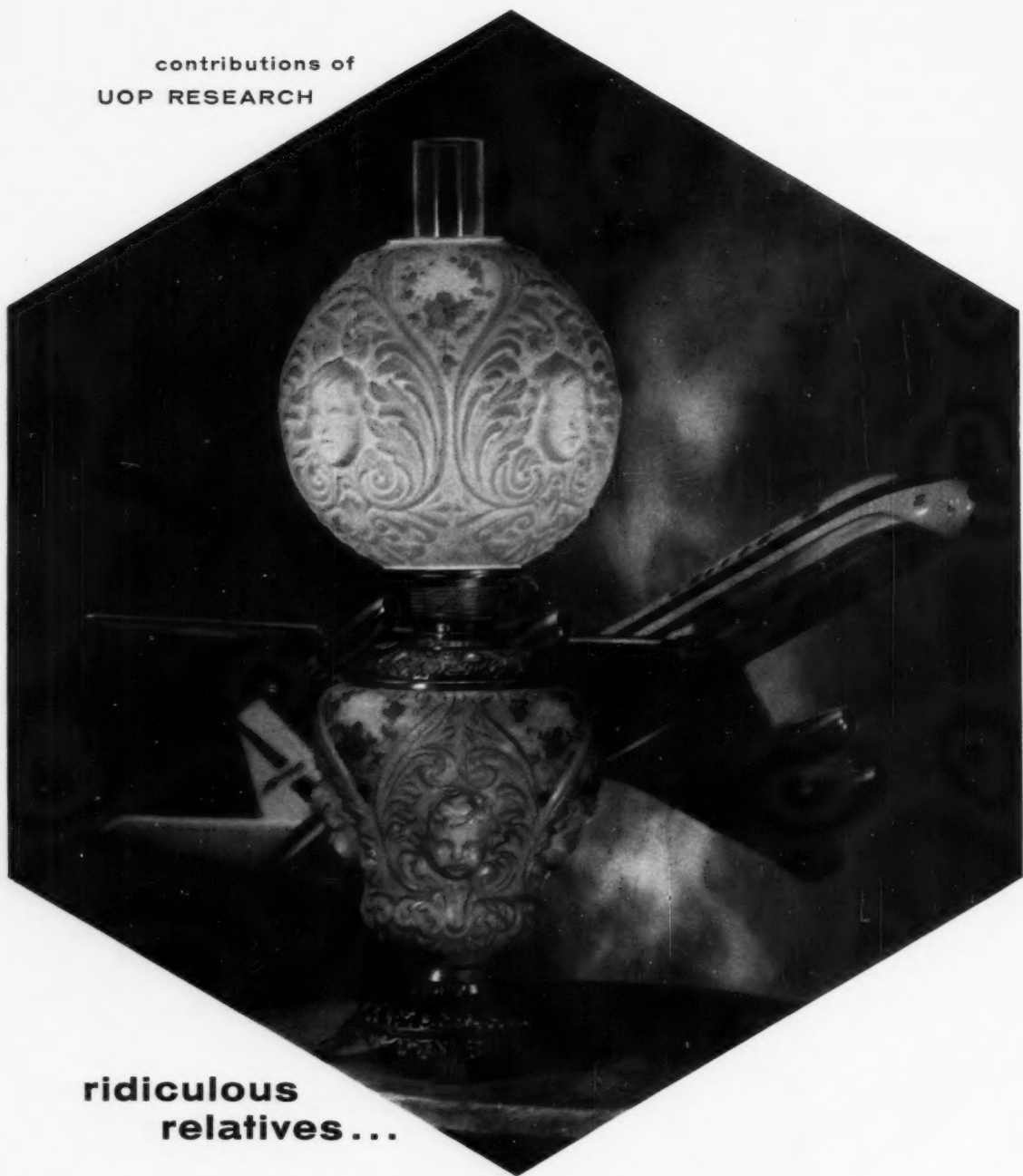
Trisodium Phosphate • Trisodium Phosphate Chlorinated • Sodium Tripolyphosphate • Tetrasodium Pyrophosphate  
Sodium Hexametaphosphate • Monosodium Phosphate • Disodium Phosphate • Sodium Acid Pyrophosphate • Tetrapotassium  
Pyrophosphate • Sulfuric Acid • Hydrofluoric Acid • Sodium Silicofluoride • Sodium Fluoride • Teox® 120 Surfactant



Ammonia • Bicarbonate of Soda • Carbon Dioxide • Caustic Soda • Chlorine • Formaldehyde • Hydrazine and Derivatives • Hypochlorite Products  
Methanol • Muriatic Acid • Nitrate of Soda • Nitric Acid • Soda Ash • Sodium Chlorite Products • Sodium Methylate • Sulfur (Processed)  
Sulfuric Acid • Urea • Ethylene Oxide • Ethylene Glycols • Polyethylene Glycols • Ethanolamines • Glycol Ethers • Surfactants • Ethylene Dichloride



contributions of  
UOP RESEARCH



## ridiculous relatives...

The kerosine lamp from Grandmother's parlor and the sleek new jet seem to have nothing in common. Yet both are devices that make use of the energy stored in kerosine.

Crude petroleum is not suitable for either lamp or jet engine. A vast technology was needed to convert crude oil into the many highly specialized products we know today. UOP research has played a vital role in the development of this technology.

Kerosine lamps are a product of the past, but the jet age and its need for improved fuels is just beginning. UOP is constantly finding more economical ways of making these fuels possible.



**UNIVERSAL OIL PRODUCTS COMPANY** DES PLAINES, ILL., U.S.A.

WHERE RESEARCH TODAY MEANS PROGRESS TOMORROW

## Ag Chemical Makers Build in Mexico



## Moving in on Mexico's Sales Map

With population rocketing and the government pushing a vast land-development program, the agricultural chemical business in Mexico has a bright future. To meet the demands of this coming growth, U.S. firms are building in Mexico. Diamond Alkali, already well-entrenched in Mexico (see map), is seeking to steal a march on competitors in what may develop into one of Mexico's biggest agricultural boom areas—its southlands.

Two major developments bode well for agricultural chemicals in Mexico's southern areas:

(1) New highways will soon make

the area more accessible. Final paving on the long-talked-about Pan American Highway is now nearing completion. It will replace the old Pan American road that winds through the mountains into Guatemala, and will form a link of the system that will connect northern Mexico and the U.S. with Central America. And other big roads are being cut into Mexico's primitive but fertile Yucatan area.

(2) The Mexican government is slowly moving ahead with its plan to "transplant" hundreds of thousands of Mexicans from the burnt-out central areas to the thinly populated Isthmus

area and the Yucatan Peninsula.

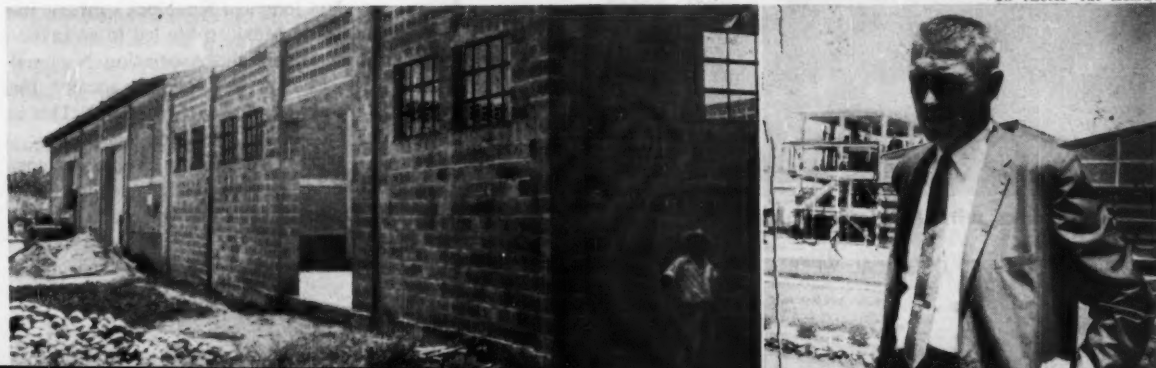
**On the Spot:** Through its subsidiary, Diamond Chemical de Mexico, Diamond Alkali is in a prime position to take advantage of the coming burgeoning of the Southern market. At Tapachula, in the state of Chiapas—known for its rugged mountain beauty, wild jungles, and ruins of ancient Indian civilizations—Diamond operates, and is now expanding, an insecticide plant—the only chemical plant in the state.

The grinding and mixing operation sits next to the town's airport, so crop-dusting planes load up right at the

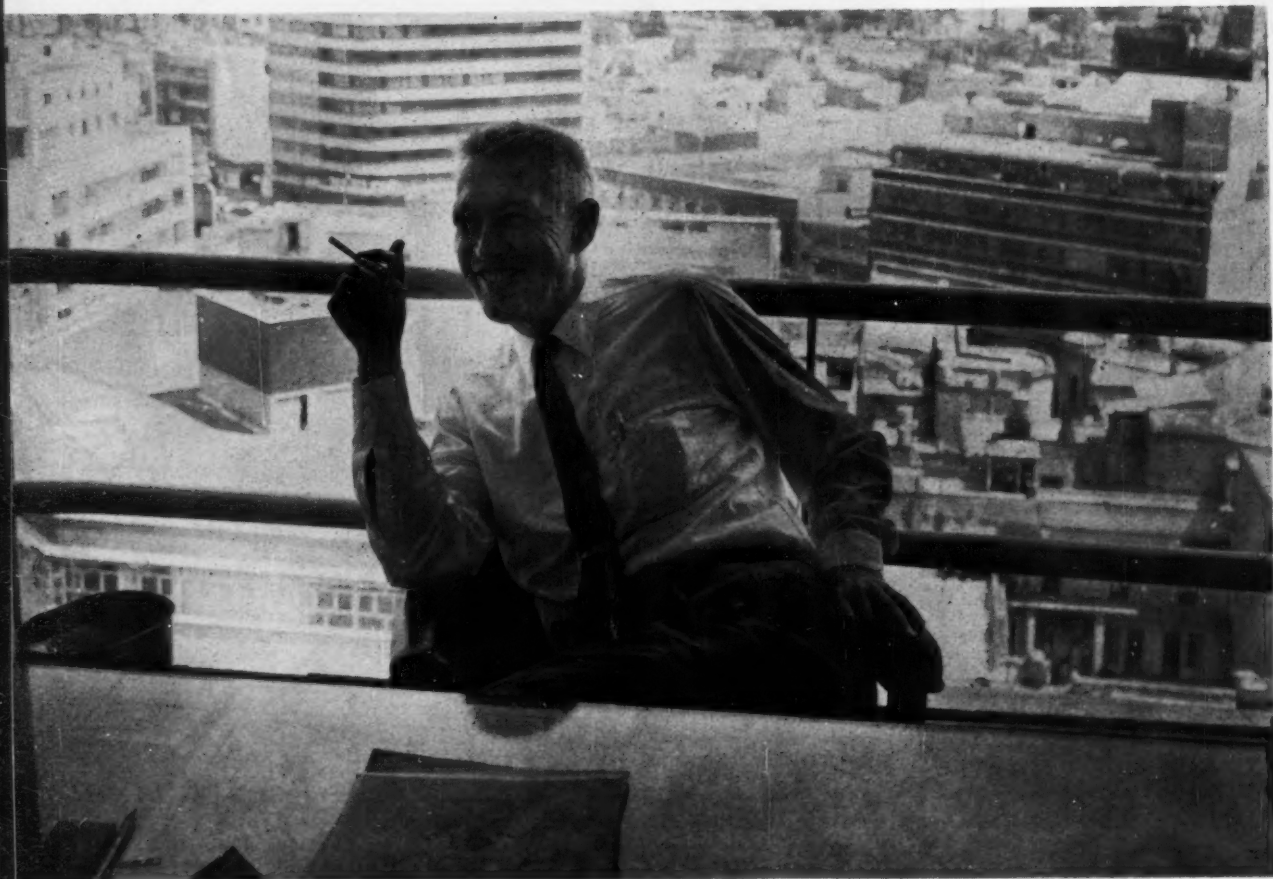
(Continued on p. 76)

**Expansion at Diamond's Chiapas plant marks success of Manager Knoblock's (right) 'think small' policy.**

CW PHOTOS—PAT MURPHY



## 'Going native' pays off for Diamond's man in Mexico by



From Mexico City office Knoblock directs sales of Diamond's subsidiary and partly owned affiliates.



Knoblock talks with Mexican manager of Mexico City DDT plant.

Every weekend Bruce Knoblock, general manager of Diamond Alkali's Mexican operations, puts on his boots, chaps and sombrero, mounts his horse, Rebozo, and practices the art of throwing bulls by the tail.

Knoblock, most American businessmen in Mexico City agree, is an unusual specimen of his breed. Like diplomats, most American businessmen on foreign duty have found that it pays to learn the local language. But few have plunged as deeply as Knoblock into the local way of life.

Not long ago Knoblock's intense interest in Mexican life led to an invitation to join the Asociacion Nacional de Charros (a national society for preserving old ranch customs). This is a rare honor for a foreigner.

Garbed in their traditional costumes, the charros often put on a Sunday "charreada," or rodeo, at their



easing business contacts, promoting pleasure.



On weekends Knoblock becomes a 'charro,' parades at colorful rodeos in traditional ranch costume.

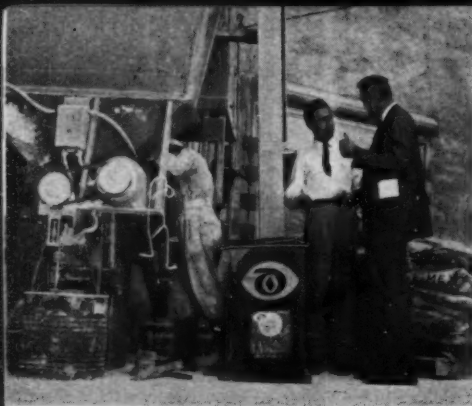
Mexico City bull ring. The "coleada"—the bull-throwing act—is one of the main events.

With his wife Patricia and his two "chamaquitos," or small sons (aged 1 and 2½), Knoblock lives on a ranch in the mountains outside Mexico City. Besides the Knoblocks, the ranch shelters three horses (for exploring neighborhood mountain trails and villages), some turkeys (for eating), and other farm animals. The whole family (except youngest chamaquito Charlie) speak Spanish fluently.

Knoblock can trace his Latin leanings at least as far back as his stay at the University of Puerto Rico, which he attended after World War II. His knowledge of Spanish, Latin America, and Latins, plus his love of the countryside and ranch life, have stood him in good stead selling agricultural chemicals. •



The charros' Sunday rodeos glorify color of Mexico's country life.



(Continued from p. 73)

plant's back door. Right now the plant's major market is the local cotton fields, where a fine grade of cotton is being grown for textile mills up at Puebla (about 80 miles southeast of Mexico City).

But when the Pan American Highway traffic starts rolling through Tapa-chula the plant will have an open doorway to Central America, which Diamond believes also has a big future in agricultural chemicals.

**Bread and Butter:** Although Mexico's southlands may have a lush future, Diamond's bread-and-butter business is still in the north, which for centuries has supplied the bulk of Mexico's agricultural needs. There, too, the cotton fields are Diamond's big market.

Diamond Alkali launched its Mexican operations in '55, now has six plants. Most are operated as separate companies with Mexican partners. Diamond's wholly owned subsidiary, Diamond Chemical de Mexico, operates the Chiapas plant and a Mexico City plant for making DDT and formulating other insecticides. The subsidiary also serves as engineering and sales headquarters.

At Matamoros, in Tamaulipas state, Insecticidas y Fertilizantes Diamond del Norte has a grinding operation. Diamond Alkali has half interest in this plant, and Mexican partners have the other half. At Ciudad Delicias in Chihuahua, the U.S. company is a partner in the Insecticidas Diamond de Chihuahua mixing plant with Jose Becerra, who also runs the local Fordson tractor agency.

Becerra is also partner with Diamond in Insecticidas Diamond del Pacifico, which operates mixing plants in Hermosillo and Ciudad Obregon. Both are in the state of Sonora.

"Taking on Mexican partners is the only way to do business in Mexico," Diamond's local manager, Bruce

## ◀ For local sales, native salesmen.

Knoblock, asserts. Especially in agricultural chemicals, he explains, "you have to deal with local farmers and ranchers, so why not have a local person who knows these people intimately own part of the business and run it?"

**Think Small:** "Thinking small," is another Diamond rule for successful operations in Mexico, Knoblock says. The first step should be to build a good sales and mixing outlet in an agricultural area—with Mexican partners. Once "goodwill and local operating know-how" have been picked up, the operation can be worked into actual chemical production.

So far, Diamond and its partners have spent a total of not quite \$2 million on their sales and production operations. The DDT plant in Mexico City is the biggest single investment to date and it cost only about \$500,000. It's a good example of how Diamond's "think small" policy works. The Mexico City operation started as a formulating and packaging plant. The DDT operation went onstream last September.

"It produces only 6 to 7 tons a day," Knoblock says, "and everybody told us that you had to have a minimum capacity of at least five times that size to make a profit. . . . We're making a profit with our miniature plant."

The pioneer Chiapas operation is another example. Last year it racked up sales of more than \$320,000 on a total investment of only \$36,000.

But Diamond plans to move into bigger-scale operations in Mexico. It's now working on a deal to put up a \$15-million "basic chemicals" plant. It will follow the "partnership pattern," with 50% or greater Mexican ownership.

**Keeping Busy:** One of Diamond's big problems is what to do with plant and personnel during seasonal "off periods." The Chihuahua operation got a lift when Mexican manager and part-owner Becerra came up with the idea of opening the tractor agency. This makes use of Becerra's agricultural contacts, and will probably help boost the chemical sales.

Diamond is planning to keep the Matamoros and Sonora state plants busy in off seasons by mixing and grinding other chemicals and mine

products there, and opening new sales lines.

Another problem: how to buck competition from "the five percenters"—U.S. chemical companies shipping agricultural chemicals to Mexico at low prices. Because of this kind of competition, Du Pont is downgrading its agricultural chemical activities in Mexico's northlands.

**Moving Ahead:** But despite competition from such "dumping," other companies besides Diamond Alkali are moving ahead to enlarge their stake in Mexico's growing agricultural chemical market.

Dow, for example, recently started producing its line of herbicides in a new Mexico City plant, a joint venture with Pyrina, a Mexican company. Dow also has an interest in another Mexican firm, Productos Quimicos, which is producing a new cotton defoliant, which Dow maintains is better than defoliants imported from the U.S.

And in Salamanca, Montrose Mexicana is putting onstream a \$4.8-million plant to produce DDT and other chemicals. The project is a three-way venture between Montrose, the government's development bank (Nacional Financiera) and private Mexican investors.

Pennsalt, Monsanto, Shell and Bayer are also active in Mexico's agricultural chemical market.

## DATA DIGEST

• **Manganese Data:** Ring-bound booklet presents story of manganese including its origins, occurrences, methods of mining, nature and properties, and its nonmetallurgical uses. E. J. Lavino and Co., 3 Penn Center (Philadelphia 2).

• **Handling Flammable Liquids:** New booklet (SG-3) discusses methods of safe handling of flammable liquids in drum lots and smaller quantities. Manufacturing Chemists' Assn., 1825 Connecticut Ave. (Washington 9, D.C.).

• **Surfactants:** Booklet discusses properties and uses of company's line of surface-active agents for use in wetting, dispersing, emulsifying, cleaning and penetrating applications. National Aniline Division, Allied Chemical Corp. (New York).

# RELIABILITY

**reliability (re-li-a-bil'i-ti) n.** The state of being trustworthy and able to be leaned upon with confidence. The quality of being capable of satisfying with integrity. Dependability.

A new process plant should work well, right from initial operations. Start-up date and cost estimates must prove accurate. It takes an experienced chemical engineering team, such as Vitro, to offer the reliability that assures on-time, profitable performance within budget

***Vitro***

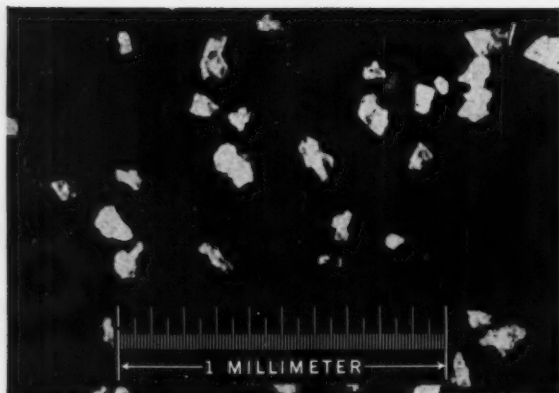
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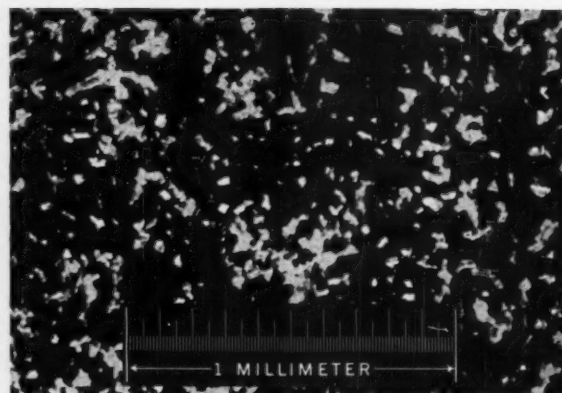
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Sodium Bicarbonate U.S.P. Powdered No. 1—For general purpose use in chemical processing, dyestuffs, adhesives, starches, textiles and industrial applications.

TYPICAL SCREEN ANALYSIS  
CUMULATIVE PERCENT RETAINED BY

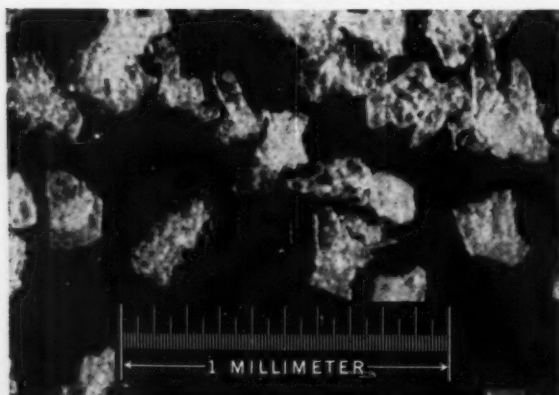
42 Mesh.....Trace	200 Mesh.....35.0%
100 Mesh......5%	325 Mesh.....70.0%
170 Mesh.....20.0%	400 Mesh.....80.0%



Sodium Bicarbonate U.S.P. Fine Powdered No. 3DF for use specifically in dry powder fire extinguisher mixes, also in rubber and plastics blowing, lubricant for sheet vinyl.

TYPICAL SCREEN ANALYSIS  
CUMULATIVE PERCENT RETAINED BY

170 Mesh.....Trace	325 Mesh.....35.0%
200 Mesh.....2.0%	400 Mesh.....45.0%



Sodium Bicarbonate U.S.P. Granular No. 5 for use in effervescent salts, other pharmaceuticals and special types of cleansers.

TYPICAL SCREEN ANALYSIS  
CUMULATIVE PERCENT RETAINED BY

42 Mesh.....Trace	100 Mesh.....92.5%
65 Mesh.....27.0%	170 Mesh.....99.0%
80 Mesh.....66.5%	



Sodium Bicarbonate U.S.P. Treated Free-Flowing for use in fire extinguishers and sponge rubber.

TYPICAL SCREEN ANALYSIS  
CUMULATIVE PERCENT RETAINED BY

42 Mesh.....Trace	200 Mesh.....35.0%
100 Mesh......5%	325 Mesh.....70.0%
170 Mesh.....20.0%	400 Mesh.....80.0%

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# Market Newsletter

CHEMICAL WEEK  
August 20, 1960

As anticipated, price cuts on nylon tire cord went into effect late last week. Du Pont initiated the move, which will keep nylon on a competitive basis with rayon tire cord. New tabs are 2-5¢/lb. lower for nylon tire cord and industrial yarn. Other nylon tire cord producers will follow. This latest price reduction stems from cuts in rayon tire-cord prices by rayon producers the previous week (*CW Market Newsletter*, Aug. 13). It began with a temporary price reduction of 2½¢/lb. by Industrial Rayon during August. Shortly thereafter, Beaunit Mills made the lower price permanent.

Prospects for higher prices during the next few months seem quite remote. With the hot battle raging between these two fibers for the estimated \$300-million tire-cord market, it would be difficult, if not impossible, for either side to make higher prices stick.

Another price storm hit the industry this week, as tabs on electronic-grade silicones were slashed. Starting things off late last week was a 6-28% price drop on Merck's line of products. Although some of the new prices brought Merck's tabs in line with those of other producers, several quotes represented significant reductions in the industry price structure. This week Du Pont added further reductions via a change in specifications. And the topper came when Dow Corning unexpectedly slashed prices on polycrystalline silicone rods.

Merck's reductions on polycrystalline billets brought its prices in line with industry tabs established by Texas Instrument in June. However, prices on several float-zone, single-crystal silicones are new.

Meanwhile, Du Pont met some of the Merck prices, established other, lower ones by using different resistivity ranges for its products.

Most producers contacted are either following the Du Pont price schedule, or are now actively studying it. Du Pont's new prices for float-zone, single-crystal silicon: 0.01-0.09 ohm-cm. for both N and P types, \$1.59/gram; 0.1-50 (Type N) and 0.1-100 (Type P), \$1.39/gram; 51-100 (Type N) and 101-200 (Type P), \$1.59/gram; 101-500 (Type N) and 201-1,000 (Type P), \$1.79/gram; over 500 (Type N) and over 1,000 (Type P), \$2.96/gram. Prices of Merck's polycrystalline billet rods were reduced from 61¢/gram to 44¢/gram; this rate has been followed by the industry since June and remains unchanged.

While Merck's prices were expected, Dow Corning's move hit the industry like a bolt out of the blue. Dow Corning reduced prices 45% on polycrystalline silicon rods (which are capable of reaching 1,000 ohm-cm. by float zoning). New tab for 1-in. rods, in quantities of over 100 lbs., is now \$300/lb. It was previously \$550. At press time the industry was still studying the situation but they will likely go along with the lower tabs.

## Market Newsletter

(Continued)

Spurred by growing demand, new hydrogen facilities continue to spring up throughout the country. Last week Air Products put another ultrahigh-purity gaseous hydrogen unit onstream, at Hopewell, Va. And the company expects to have its fourth plant on the East Coast in operation at Newark, N.J., in November. Capacity for both plants will be about the same, roughly 18 million cu.ft./month.

And completion of the first Norelco hydrogen generator, which will produce 1,000 cu.ft./hour of ultrapure hydrogen, is reported by Cryogenerators, Inc. (Ashton, R.I.), a subsidiary of North American Philips Co., Inc. The machine was built for installation in the plant of Commercial Steel Treat at Detroit. Norelco predicts the new machine will make it economically feasible for small manufacturers to use gaseous hydrogen for hydrogenation of chemicals and food, heat treating of metals, and chemical processing.

According to U.S. Dept. of Commerce figures, hydrogen demand has more than doubled since '54, although the largest increase came last year. Production jumped from 44 billion cu.ft. in '58, to almost 60 billion cu.ft. in '59. And demand has been higher in '60, will probably push production to between 65-70 billion cu.ft. for the year.

•  
The railroads' efforts to offer shippers "guaranteed rates" based on annual volume shipments have hit a snag.

An Interstate Commerce Commission examiner has recommended that such rates now in use by the Soo line and the Duluth, South Shore and Atlanta Railroad be cancelled on grounds that they are illegal. A final decision by the commission is still a month or so away. Regardless of how ICC rules on the matter, the issue seems certain to be headed for the courts.

The novel freight-rate plan is being keenly watched—and supported—by chemical and other big shippers. It offers lower rates, guaranteed not to be increased, over an agreed period of time if shippers send the bulk of their shipments by rail. A new market in the offing, the rails say, is the hauling of bulk chemical process goods.

Truckers and water carriers are strongly opposing the "guaranteed rate" concept. If the rails win ICC approval on the current test case, the opposition claims it will spread across the country to virtually every big shipper.

•  
Outlook brightens for titanium, with reports of expanded uses in the missile field. On the Polaris project, titanium is replacing steel used in construction of the missile frame. Major advantage is weight reduction, helps to extend the missile's range.

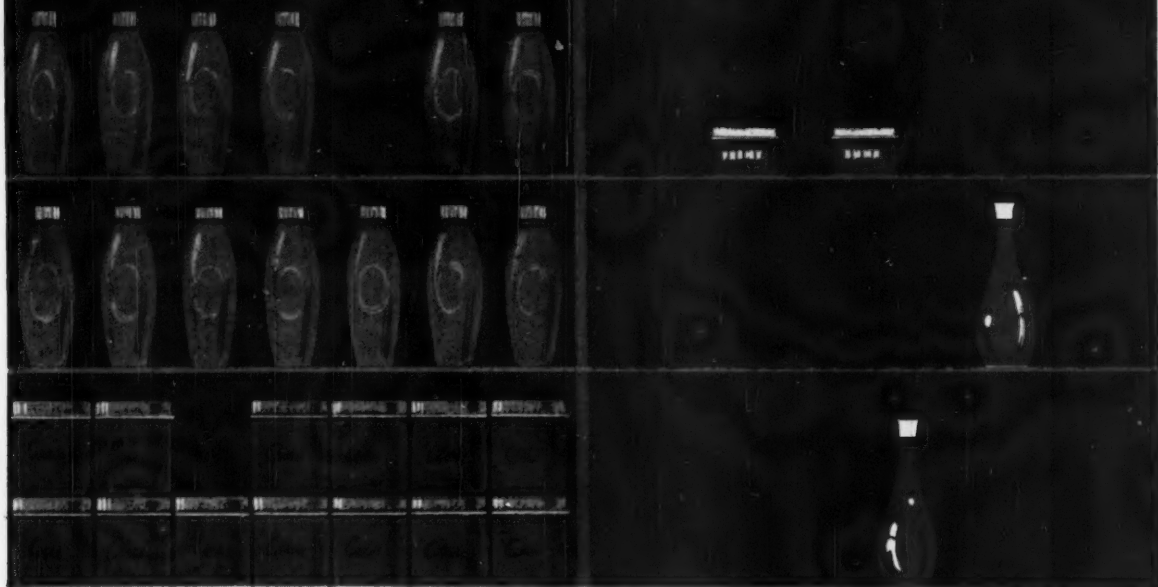
Just how much of a weight saving is obtained in the 14-ton missile, is of course a Navy secret. But it is known they are shifting to this type of construction.



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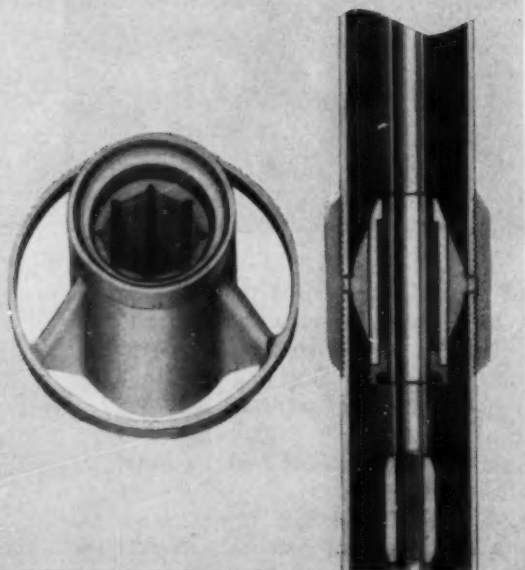
# NEWS FROM GOODRICH-GULF

## RUBBER BEARINGS KEEP PUMP SHAFT RUNNING SMOOTH

Ameripol Rubber is used for the special Cutless Bearings which support deep-well shafts on several types of pumps for use in wells, tanks, sumps or reservoirs, made by The Deming Company of Salem, Ohio. The bearings are available from Lucian Q. Moffitt, Inc., Engineers and National Distributors, 333 South Main Street, Akron, Ohio.

The Ameripol polymer used is tough, and is not affected by sludges in waste chemicals often found in water. The Cutless Bearing is fluted, thus sand or grit present in the fluid being pumped is quickly washed away. With conventional metal bearings, abrasive solids cut and score the bearing, leading to a loose fit and vibration.

This type of water-lubricated rubber bearing is particularly applicable on industrial equipment where bearings are submerged, as well as propeller shafts of boats.



## NEW MARKET FOR RUBBER IN THE COMPACTS

The automotive industry's success in "selling small" has meant a big new market for Styrene-Butadiene Rubber. This compact car, for example, carries approximately 48 pounds of SBR parts.

Largest uses by weight are the tires. Other SBR applications include battery, steering linkage and covers, clutch and brake pedals, engine mounts, and a wide assortment of grommets, bushings, and seals throughout the vehicle.

While many parts are SBR, the requirements naturally vary, and many different polymers are used. As the world's largest source of synthetic rubber, with the broadest range of polymers, Goodrich-Gulf is in unique position to help rubber product fabricators supply this new market.



# RUBBER GETS A "COMPLETE PHYSICAL CHECKUP" AT GOODRICH-GULF SALES SERVICE LABORATORY

These scenes are representative of dozens of special tests conducted at the G-G Sales Service Laboratory for the benefit of our customers. Here polymers are checked in different compounds to measure the properties needed in individual applications. Problems are

thoroughly analyzed so that sound technical recommendations can be made. Evaluations and special tests on polymers you use are available to you through Goodrich-Gulf Technical Service.

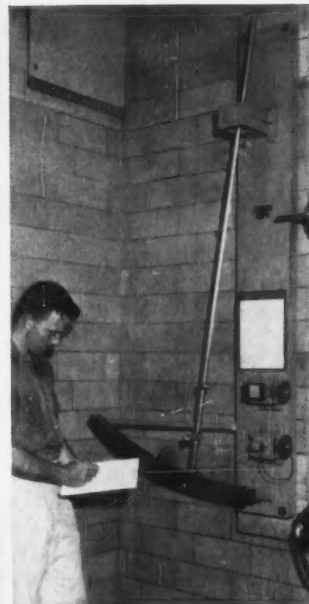
Address: 1717 East Ninth Street, Cleveland 14, Ohio.



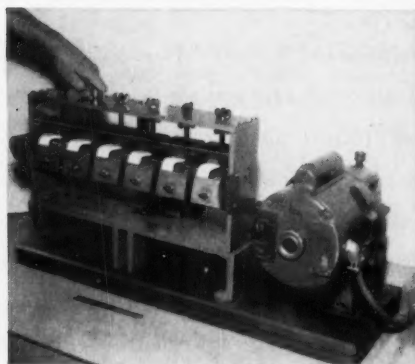
Sandpaper rubs rubber raw to check resistance to abrasion.



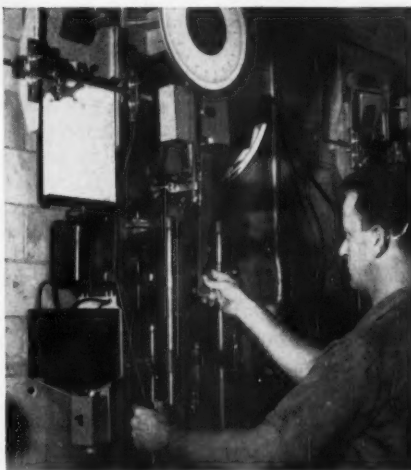
Ease of flow and processing determined by Mooney viscosity test.



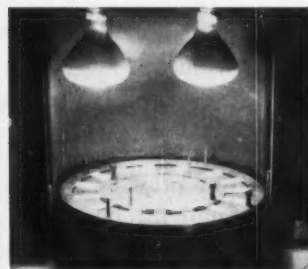
Rebound of the swinging hammer gives measure of resilience.



Specimens are flexed hour after hour until failure.



Test strips torn apart to measure strength and elongation.

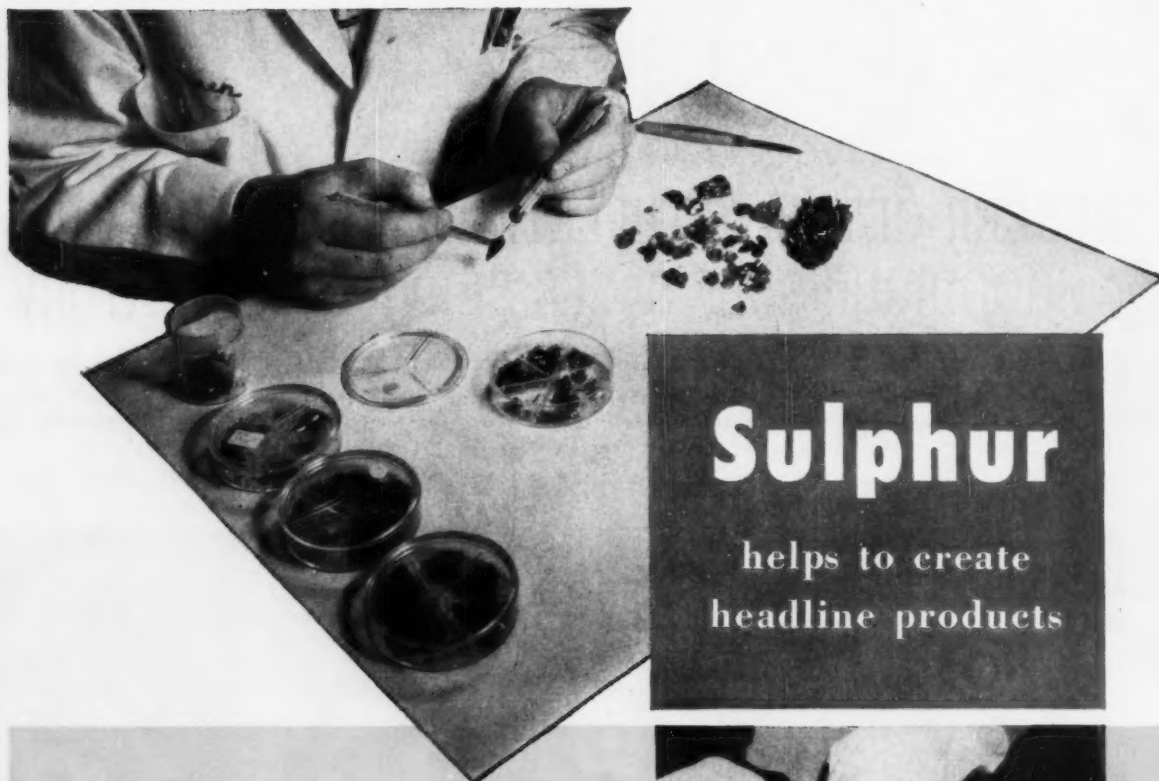


Effects of sunlight on color evaluated by ultraviolet tests.



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THE ONE TO WATCH FOR NEW DEVELOPMENTS



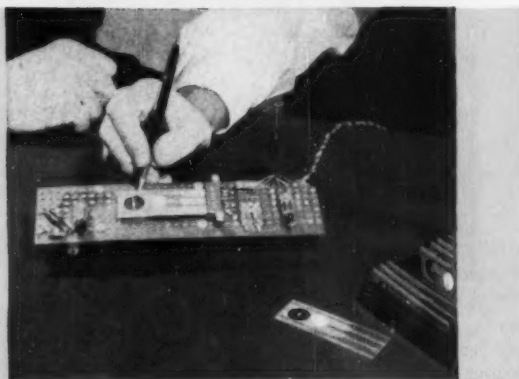


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General Motors Research Laboratories has recently announced the application of a new transistor material ... the cadmium sulphide crystal which offers several distinctive values over the single type atomic material. Its outstanding characteristic is that it is controllably sensitive to and affected by light and other radiations.

CdS provides another interesting development where Sulphur is importantly in the picture ... a development that may have far-reaching effects in the broad field of electronics.

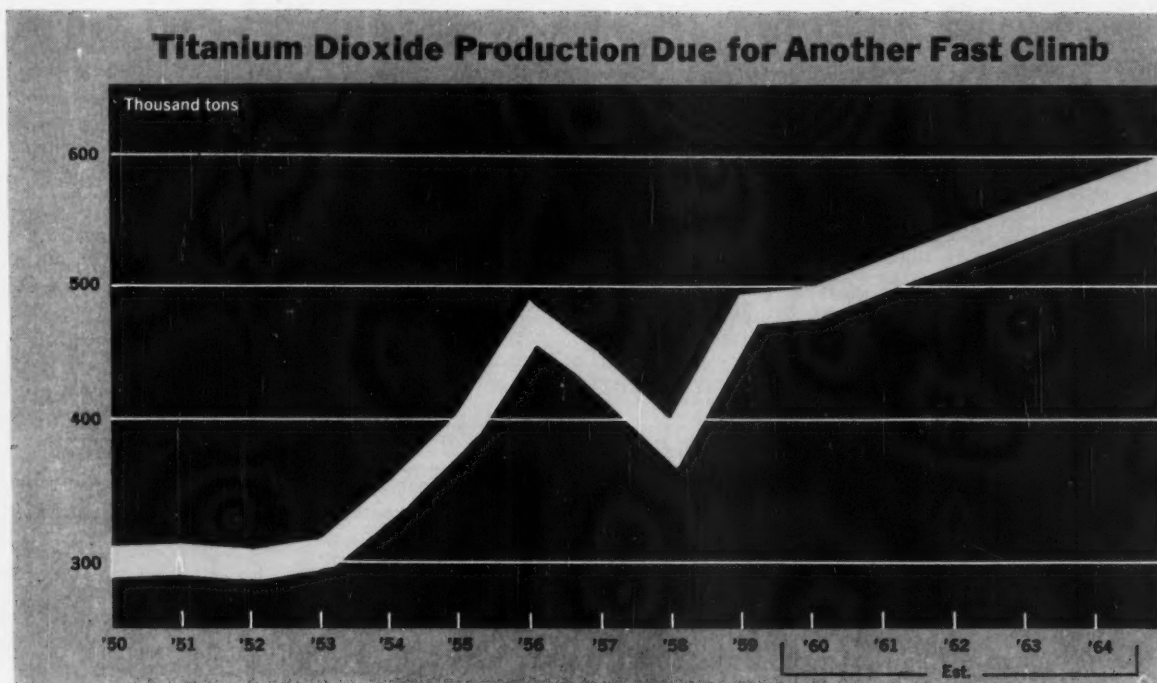
Sulphur and its many derivatives, either directly or indirectly, have a part in the creation of countless products, adding to the strength of our economy. Our business is to produce Sulphur—molten as well as solid—and have it available in sufficient tonnages at several departure points to serve any plant in the United States or Canada. Supplementing this basic policy, we are developing centralized distribution centers for quicker service.



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## Population Growth Brightens $\text{TiO}_2$ Outlook

During '59 U.S. titanium dioxide output rebounded from a four-year low, shot to a new high of 495,000 tons—18,000 tons over the previous record 477,000 tons in '56. Now, after shaking off the effects of the recession and in spite of a continuing decline in the export market, titanium dioxide production is once more rising, will reach about 600,000 tons/-year by '65 (see chart above). More-optimistic observers predict this figure will be even higher.

Main reason for optimism: the shifting population pattern. During the next five years a big increase in the number of new families is expected to boost demand for consumer goods and other products that use large amounts of titanium dioxide. For example, demand for houses, apartments, automobiles and appliances is expected to increase sharply during this period, resulting in a stepped-up demand for paints—major outlet for titanium dioxide.

Last year paints, varnishes and lacquers took 58.2% (275,000 tons) of the estimated 470,000 tons of titanium dioxide shipments. And since the ma-

terial has no serious competition from other pigments in this field, it will continue to follow the growth of the paint industry.

The paper industry, second-largest outlet for titanium dioxide, is another growth area. Currently this outlet takes 15.1% of shipments (71,000 tons) and will move up strongly, based on increased demands for the pigment in packaging, printing and industrial uses.

Floor coverings, although a smaller market, will also contribute considerably to titanium dioxide's growth. Even now this market is taking a larger share of total output. In '56 only 4.9% of shipments of the pigment went into this outlet. By '59 the figure had grown to 6.3% of the total.

Other smaller uses of titanium dioxide, e.g., coated fabrics and textiles, rubber, printing inks, are all products that will be influenced by increased purchasing power due to the growth in population.

**More U.S. Expansions:** To take care of expected demand during the next few years, it's certain that new capacity will have to be added to current U.S. capacity of 633,000 tons/-

year (see table, p. 86). Producers are studying this problem, and one, New Jersey Zinc, is now expanding its plant at Gloucester City, N.J. When completed sometime next year, capacity will be 46,000 tons/year, double that of the present plant.

It's likely that most producers will follow the same approach as New Jersey Zinc—rather than build brand-new plants, they'll boost capacity of existing units. As producers point out, most reported capacity data are conservative, and considerably more output could be achieved should demands arise. During the '50s producers were caught short by heavy demands for their products, therefore designed their new plants to be readily expanded.

**Export Picture Changed:** Although U.S. titanium dioxide producers are optimistic about domestic markets, new capacity in foreign countries has resulted in a sharp drop in export business. And this decline is expected to continue.

In '54 heavy overseas demand took 63,800 tons of U.S.-produced titanium dioxide. This was a sharp jump over

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The N-DUR Process\* is a new process of applying a protective wear-resistant coating to asphalt and paved surfaces. Parking lots and driveways treated by the N-DUR Process are highly resistant to grease, oil, gasoline, water and grit. The process has been successfully used by such companies as: Standard Oil of Indiana, Gulf Oil Co., and Cities Service Oil Co. These users have found that the coating adds years to the life of the surface and it is attractive and easy to clean. Colors available are: Silver, Gold, Green, Red and Black.

The developer of the Process wishes to sell the patent rights and registered trade marks to a responsible company. He also wishes to take a position with the purchaser in the fields of product development, marketing or technical sales. He has 20 years of experience in the manufacturing and marketing of coatings, finishes and adhesives. For complete information write to: Chemical Week, BO-4732.



\*Pat. Applied For

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Plastics & Chemicals Inc.  
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## MARKETS

### Titanium Dioxide Capacity

		Tons/year
<b>Du Pont</b>	Edge Moor, Del.	55,000
	Baltimore, Md.	85,000
	New Johnsonville, Tenn.	45,000
<b>National Lead</b>	Sayreville, N.J.	167,000
	St. Louis, Mo.	108,000
<b>Glidden</b>	Baltimore, Md.	12,000
	Hawkins Point, Md.	48,000
<b>American Cyanamid</b>	Piney River, Va.	18,000
	Savannah Creek, Ga.	72,000
<b>New Jersey Zinc</b>	Gloucester City, N.J.	23,000

previous years, and consumed about 20% of U.S. production that year. Exports dipped to 54,400 tons in '55, then hit a record 64,800 tons in '56. But by this time foreign capacity was being increased, and since '57 U.S. exports have continued to slip. Last year only 36,000 tons of the material were shipped overseas.

One of the big factors that will seriously cripple the export market is a new titanium dioxide plant to be built in Canada. About 50% of all U.S. exports of the pigment go to Canada, where they find use mainly in the paper industry. Now British Titan Products Co. Ltd., which has been supplying a large share of Canada's needs from its plant in England, has scheduled a 20,000-tons/year plant at Sorel, Que.

**Others Coming:** Further underscoring the international buildup in titanium dioxide are two new developments: (1) reports last week that a second plant will be built in India; (2) start of operations at Mexico's first unit.

India's second titanium dioxide plant is being undertaken by a newly formed company, Potanium Ltd. (*CW*, Aug. 13, p. 26). Potanium, in collaboration with La Porte Industries, an English titanium dioxide producer, will erect a 4,500-tons/year unit on the West Coast of India. Capital outlay for the project will be about \$6.3 million.

Meanwhile, the only titanium dioxide producer in India, Travancore

Titanium Products Ltd., is expanding. Capacity of the present plant is being doubled, will boost output potential to 3,600 tons/year.

In Mexico, the new unit of Du Pont's subsidiary, Du Pont, S. A. de C. V., has been started up, will soon be turning out commercial quantities of pigments. The unit, located at Tampico, Mex., has an estimated capacity of 8,000 tons/year, will probably be able to take care of that country's titanium dioxide needs.

**Foreign Needs Growing Rapidly:** These plants are just a small part of the many new titanium dioxide expansions that have taken place in the past three to five years. At the beginning of '57, for example, worldwide capacity was rated at approximately 660,000 tons/year. By '60 this figure had jumped almost 50%, to around 960,000 tons/year, and will pass the 1-million-tons/year mark next year.

Most of the new increase in output potential has occurred in Western Europe, once an important market for U.S. producers. In '57 capacity in West Germany, France and the U.K. was about 140,000 tons/year. This figure has advanced about 75%, and today these countries could turn out about 245,000 tons/year of pigment. More expansions are on the way.

Last December Du Pont entered into a joint venture with Sachtleben AG., formed a new company, Pigment Chemie GmbH. (Du Pont has



# Here's Diversity in a Diol ....

and assured availability\*



\*Thanks to increased plant capacity

## CELANESE 1,3-BUTYLENE GLYCOL

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**AMERICAN CANCER SOCIETY**

## MARKETS

a 26% interest; Sachtleben, 74%).

The new company is now constructing an \$8.3-million titanium dioxide unit at Homberg on the Rhine. Du Pont will supply the technical experience to build the plant, which will have a capacity of 18,000 tons/year.

Meanwhile, in the Netherlands, another major titanium dioxide unit is being built at Botlek near Rotterdam. It's a joint venture between N. V. Billiton and Albatros Zwavelzuur Fabrieken N.V. The plant's capacity will be 10,000 tons/year; it's expected to be onstream in '62. Several other expansions in Germany, the U.K., the Union of South Africa, Finland and some Iron Curtain countries are also in the works.

**Import Problems:** Some concern is being shown for the small but growing amounts of imports, once non-existent in this country. During the first six months of '60 imports totaled 2,500 tons, equal to '59 imports. Although this is small, compared with total U.S. production, producers are still keeping a watchful eye on this area.

Japanese imports present one of the industry's big threats. The titanium dioxide industry is located on the East Coast, and movement of material to the West Coast involves costly shipment by rail. Since Japan consumes only about half of the titanium dioxide it produces, the U.S. market is naturally a prime target for its exports. So far, imports from this source have been small but could become a problem during the next few years.

For U. S. titanium dioxide producers, growing worldwide capacity represents the loss of a fairly sizable market. But since the product is tied so closely to the U.S. economy, producers hope to offset their loss by riding the expected economy growth of the '60s to new highs.

### Pesticide Boom

**Production of pesticides** and other organic agricultural chemicals hit a new high in '59, based on figures released by the U. S. Tariff Commission last week.

Total output of these chemicals rose 9% over '58, to 585 million lbs. and was 3% higher than the record production in '56. New highs were also posted for both dollar and

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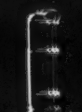
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Photographed by Alan Fontaine

## MARKETS

sales volumes for these products. Sales totaled 502 million lbs. (valued at \$225 million), compared with 467 million lbs. (valued at \$196 million) in '58.

Of the two major groups reported—cyclical and acyclical—biggest production gains were made by the acyclic chemicals, which posted a record production of 116 million lbs. This was 23% over last year's output, and 11% above the previous record set in '57. Sales of 93 million lbs. were slightly higher than the 89 million lbs. sold in '58, but a shade below the record set in '57. In dollar value, however, the \$52 million value exceeded the previous high of \$48 million set in '58.

Cyclic compounds, largest of the two groups, were up 5% over '58, totaled 469 million lbs., just under the 473 million lbs. turned out in '56. Both sales and dollar volume were at an all-time high. Sales totaled almost 410 million lbs. (valued at \$172 million), vs. 378 million lbs. (\$148 million) in '58. Largest volume chemical in this group was the insecticide DDT, which was at a record high of 157 million lbs. This was 8% higher than the previous record of 145 million lbs. set in '58. A large share of DDT was exported. Last year over 70 million lbs. of DDT went overseas, with the largest share going to India, and large quantities moving into Mexico.

## Glycerin Demand Holds

U.S. production of glycerin is still moving at a record rate, according to figures released last week by the Assn. of American Soap and Glycerine Producers, Inc.

Glycerin producers turned out 157 million lbs. of product during the first six months of '60, 25% more than the 126 million lbs. produced during the same period in '59. Although disappearance was also up sharply, it has not kept pace with the higher production levels. Result: a sizable amount of glycerin has gone into inventories.

Glycerin disappearance in the first half of the year was 146 million lbs., about 16% more than the 127 million lbs. figure for '59. But this lower disappearance rate has boosted inventories at the end of June by 11 million lbs.



P&G's Chairman Neil McElroy: A feeling of pride and accomplishment.



ADA's Lester Burket: Crest is 'an effective aid, but not a cure-all.'



Colgate's Little: ADA's nod cracks Colgate's invisible shield.

## Dentifrice Marketing

The \$235-million dentifrice industry—competitive and turbulent even under normal conditions—has worked itself into a state of near-frenzy this week in the wake of the American Dental Assn.'s award of its seal of approval to Procter & Gamble's Crest. ADA has certified the product to be an effective decay preventive (CW, Aug. 6, p. 92)—the first time the association has shown the slightest benevolence toward any commercial toothpaste.

Ramifications of P&G's coup are still sinking in, and competing companies look ahead with trepidation.

**Case in Point:** Colgate-Palmolive Co. (New York)—in addition to the problem of what to do about P&G—is having troubles of its own this week with the Federal Trade Commission. On Aug. 4 FTC ordered Colgate to stop claiming that its Colgate Dental Cream, biggest seller in the field, provides complete protection against tooth decay. FTC says that Colgate's advertising of an "invisible protective shield" was a deceptive portrayal of the product. For Colgate, the ruling was more salt in its wounds, since the company had eliminated these words from its ads last December after FTC had made a formal complaint against them. (Last week's ruling was not final, and Colgate will appeal.)

In addition, Colgate says it never claimed its Gardol additive offered complete protection against tooth decay, with emphasis on the word "complete." It did claim, says Colgate's Chairman Edward Herman Little, that its product reduced cavity formation "to a degree as great or greater than that claimed by any competitive dentifrice."

**First Endorsement:** The American Dental Assn.'s endorsement of any dentifrice was always judged unlikely by the dentifrice industry. When the about-face came, it was a surprise to the trade. The closest ADA had ever come to a favorable nod was its acceptance of advertising in the *ADA Journal* of Kolynos toothpaste, made by Whitehall Laboratories, division of American Home Products (New York). Kolynos makes no claims for containing any special decay-prevent-

ing ingredients, emphasizes its cleaning qualities.

This month, when ADA's Council on Dental Therapeutics reported its decision on stannous fluoride-containing Crest, it authorized P&G to use this statement in Crest ads:

"Crest has been shown to be an effective anticaries dentifrice that can be of significant value when used in a conscientiously applied program of oral hygiene and regular professional care; Crest dentifrice may also be of value as a supplement to public health procedures."

ADA was specific in adding that no other toothpaste measured up to ADA's standards. The council's chairman, Dr. Lester Burket, cautioned, however, that Crest "is an aid in combating dental decay, it is not a cure-all." He added that Crest was not a substitute for fluoridation of community water supplies, which "remains by far the most effective means of obtaining the benefits of fluorides." ADA also recognizes a third method: topical application of fluoride solutions directly to the teeth by dentists.

**Two Misses and a Hit:** P&G first got into the dentifrice field in the late '30s with liquid Teel, which lacked a solid abrasive. Never a big success, it was dropped in '47. Another attack on Colgate's dominant position came in '54 with P&G's introduction of Gleem, which turned out to be a good, sturdy seller but nothing out of the ordinary in formulation.

Even before Gleem was launched, P&G was working on a stannous fluoride dentifrice. In '55 it brought out Crest, containing Fluoristan. To date it is the only SnF<sub>2</sub> product on the market.

Dentifrices have undergone a succession of fads and phases. In the late '40s ammoniated products were big items, followed by the chlorophyll formulations in the early '50s. About that time Colgate added Gardol, sodium N-lauroyl sarcosinate, to its product.

**The Era of Fluorides:** In '55, fluorides came on the scene: stannous fluoride in Crest; sodium fluoride in Super Amm-i-dent (Block Drug), Sentry (Bristol-Myers), Brisk (Colgate).



# on a New Battleground

Colgate assumed a never-say-die position with Brisk, changing its main ingredient from sodium fluoride to stannous fluoride and finally to Gardol. Colgate says it is still selling the product but not advertising. The company is known to have a patent on a stannous fluoride formulation.

P&G's research work on sodium fluoride and then stannous fluoride was done in cooperation with the Indiana University School of Dentistry and underwritten by P&G. Work on sodium fluoride convinced the company that the compound was not effective in reducing cavities, but that stannous fluoride's reaction with the enamel made the teeth more impervious to acid attack.

The problem was to put stannous fluoride into a tube, since it was reactive with most conventional dentifrice ingredients. The winning combination compatible to polishing turned out to be stannous fluoride and calcium phosphate.

The present Crest formulation contains 0.4% stannous fluoride, 39% calcium phosphate, 30% glycerin, 1% stannous pyrophosphate, 25% water, and miscellaneous formulating agents.

This formulation is patented by the Indiana University Foundation, and P&G is its exclusive licensee. So far, the foundation has refused to speculate on whether it will grant other licenses or how long its agreement with P&G will run.

**The Supply Picture:** Metal & Thermit Corp. (New York), main supplier of stannous fluoride, got into the picture in the early '50s when Indiana-P&G researchers asked M&T to make the tin compound for their evaluation work. First commercial shipments to P&G were in '55.

Later on P&G's second source of the material was Ozark-Mahoning Co. (Tulsa, Okla.).

Despite current publicity, the stannous fluoride market is a small one—for example; its 0.4% use in Crest and its use in tiny quantities by some dentists for topical cleaning. As M&T puts it, "A pound lasts for years." Today's price: \$3.50/lb.

The M&T said it is now hoping to

expand the market. It expects dentists' use to increase, and is also working on an idea for a stannous fluoride mouthwash.

**Other Possibilities:** P&G's feat has reportedly stepped up its competitors' lab formulation work. Extensive testing is being done on silicone additives and coatings by the University of Alabama's dental school, and quaternary amine additives are also being looked at closely by the big toothpaste makers. Main drawback to the quaternaries is unpleasant taste, although they are reported to be effective in preventing tooth decay.

Along similar lines, work is progressing on anticavity additives for candy and sugar. In some quarters it is felt that a nontoxic food additive to prevent sugar from forming acids that attack the teeth is a more realistic approach in preventing decay than are toothpaste additives.

**The Big Questions:** Two questions are racing through the stunned toothpaste industry: How is P&G going to promote its windfall? How will its competitors fight back?

So far, P&G has given little indication of how it will exploit the ADA approval. Its comments to date have been modest and underplayed, as in the statement of Neil McElroy, P&G's board chairman: "We are sure you will understand our feeling of pride and accomplishment. . . . Our broad policy is to market Crest at all times within the framework of preventive dentistry, to help spread information about new developments related to preventive dentistry, and to search constantly for additional adjuncts to the practice of preventive dentistry."

It is expected that P&G will continue this soft-sell, public-service theme when its new ad campaign gets underway.

The other toothpaste makers admittedly are in a dilemma. Their hope: to turn out a product comparable to Crest, one that would get ADA's blessings.

But here's the rub: several years of testing were necessary to convince ADA of Crest's therapeutic qualities. Even if Colgate, for example, came up with a superior formulation to-

## Exit the Gimmick?

*For years dentists have been the chief enemies of toothpaste. Their advice to patients: You can brush your teeth with soap and water; it will do just as good a job as any toothpaste.*

*Fortunately for the dentifrice makers, people don't like the taste of soap. In the past, selling toothpaste demanded two essentials: a gimmick and a good flavor. The former—broadly ballyhooed in advertising—include: chlorophyll, ammoniated pastes, hexachlorophene, red-and-white striped paste. Noteworthy among the latter: tangy peppermint and spearmints, fruit flavor. P&G, however, is now in a position to sell Crest on a radically different basis. It has an officially approved therapeutic claim.*

*Here's how the top companies rate in share of the toothpaste market during the "gimmick" era: Colgate's dental cream has been the biggest seller for about 50 years. At one time it had 60-70% of the market, now only about 35%.*

*P & G takes second place, with Gleem's 20% of sales, and third place with Crest's 12-13%. Combined, they are edging up on Colgate.*

*Fourth and fifth in the running are Lever Bros.' Pepsodent—11% of the market—and Stripe.*

*Sixth in line is Ipana, a product of Bristol-Myers.*

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## SPECIALTIES

morrow—or retrieved its own patented but discarded stannous fluoride formulation—it might be several years before the ADA would approve the product.

In the meantime, Crest has a clear field. Industry seers are betting on P&G to capitalize on their big advantage for all it's worth.

## Tanner Patented

Wallerstein Co. (Staten Island, N.Y.), pioneer in producing the basic ingredient in synthetic tanning lotions, has been granted a patent on its fermentation process for making dihydroxyacetone.

Bottled tans, sold in the form of after-shave lotions, suntan lotions, and women's foundation creams, are reported to be selling at the rate of several million dollars monthly.

Wallerstein went into production of DHA in '59 at the request of Drug Research Corp. (New York), maker of Man Tan. But it envisions other less spectacular uses for its product in the future in the manufacture of dyes, pharmaceuticals and plasticizers.

In addition to Wallerstein, three other companies make DHA: Chas. Pfizer & Co. (New York), Dawe's Laboratories (Chicago) and Abbott Laboratories (Chicago). All declined to comment on the possible implications of Wallerstein's patent, pending review by their legal departments.

## PRODUCTS

**Seamless Aluminum Can:** The Bradley-Sun Division, American Can Co. (New York), is now turning out a new, 6-oz. aluminum aerosol can without a side seam. Price per thousand: \$50 for undecorated can, \$53 for a four-color, double internally lined one.

**Waxes for Polish:** Bareco Wax Co., division of Petrolite Corp. (369 Marshall Ave., St. Louis, Mo.), has developed two new waxes for the polish industry. Petrolite C-8500 is said to emulsify, with the help of an extremely small amount of oleic acid, to give a hard film. It's based on Fisher-Tropsch wax. Petronauba W is a white emulsifiable wax, said to be the first of its kind, manufactured from high-melting-point microcrystalline waxes of domestic origin.

## EXPANSION

**Yardley in New Jersey:** Yardley of London, Inc., will begin construction of a \$2.5-million plant this month in Totowa, N.J. Completion is expected in about a year.

**Change of Name:** DAP, Inc. has been adopted as the new corporate name of Dicks-Armstrong-Pontius, Inc. (Dayton, O.), manufacturer of putties and caulking compounds.

**Canadian Expansion:** Polyresins Ltd. (Toronto, Ont.), subsidiary of Bate Chemical Corp., has completed a \$250,000 expansion of facilities and equipment. The firm produces vinyl, acrylic and styrene emulsion for use in the manufacture of adhesives and coatings.

**Upjohn in Italy:** The Upjohn Co. (Kalamazoo, Mich.) has established a wholly owned Italian subsidiary to manufacture and distribute its pharmaceutical products in Italy.

**Toiletries Warehouse:** The Colgate-Palmolive Co. (New York) has broken ground for a 17,000-sq.ft. addition to its toilet articles warehouse in Kansas City. Completion date will be late this year.

**New Film Maker:** Dynacolor Corp. (Rochester, N.Y.) will manufacture 8- and 35-mm. color film for the Walgreen Drug chain. The new film will retail at 60% the price of competitive films.

**Move to Ohio:** The Nease Chemical Co., Inc. (State College, Pa.), plans to open a plant in Salem, O., for production of organic chemicals for pharmaceuticals. The firm's Lock Haven, Pa., operation will be shut down. (For more on Nease see CW, April 23, p. 82.)

**Flavor Consolidation:** International Flavors & Fragrances Inc. (New York) will consolidate its flavor operation at its Teterboro, N.J., plant from its present location in Elizabeth, N.J. A three-year expansion program will include increased capacity for processing natural fruits, vanilla extracts and other flavors, plus an additional spray-dry unit and enlarged service facilities and power plant.

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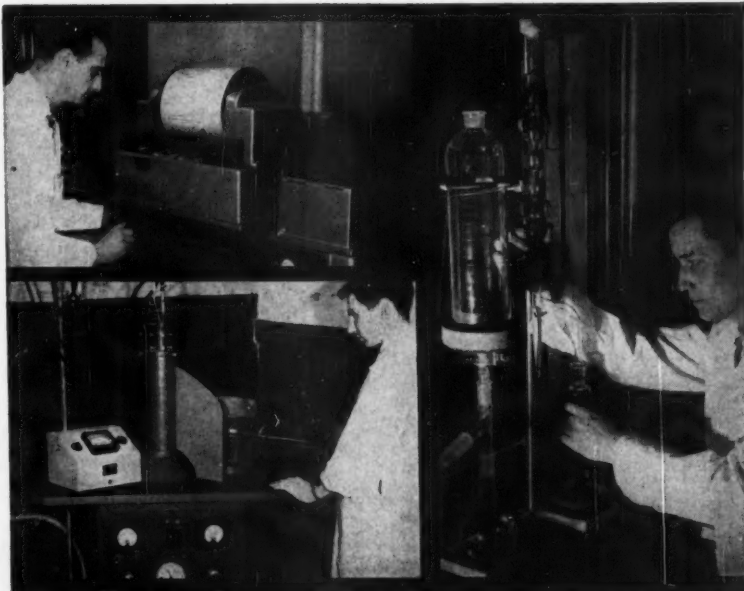
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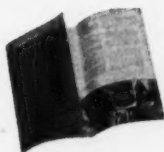
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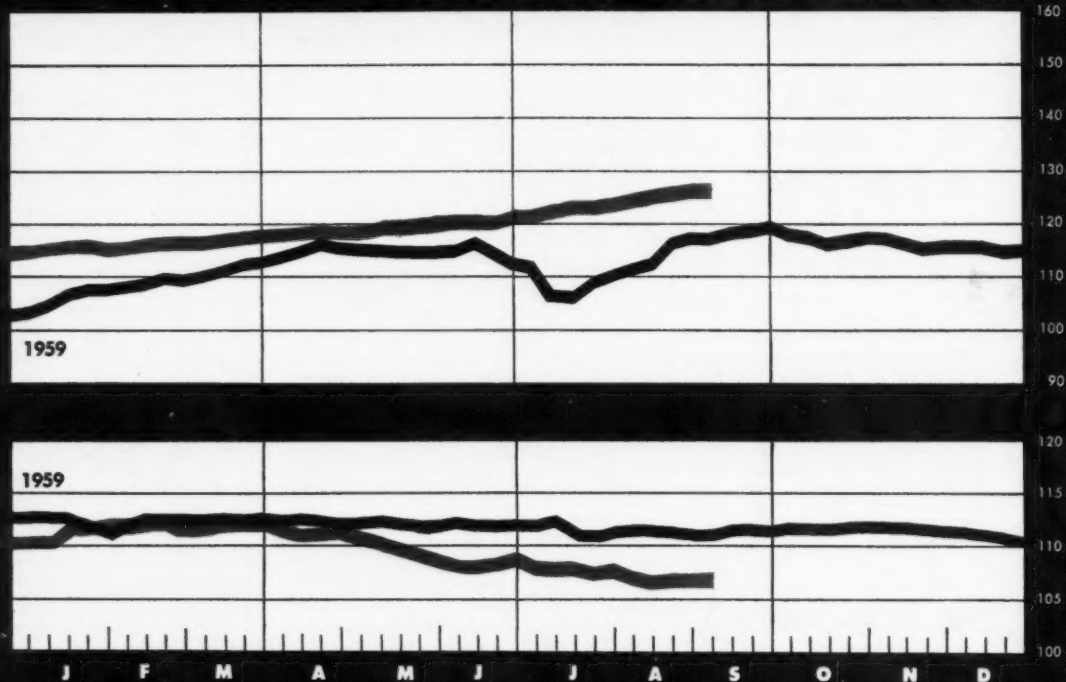
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# BUSINESS BENCHMARKS



AUGUST 20, 1960

## WEEKLY BUSINESS INDICATORS

	<i>Latest Week</i>	<i>Preceding Week</i>	<i>Year Ago</i>
Chemical Week output index (1957=100)	126.0	126.5	113.2
Chemical Week wholesale price index (1947=100)	107.5	107.3	110.8
Stock price index (12 firms, Standard & Poor's)	47.96	46.99	60.05
Steel ingot output (thousand tons)	1,556	1,537	335
Electric power (million kilowatt-hours)	14,709	14,746	13,675
Crude oil and condensate (daily av., thousand bbls.)	6,837	6,821	6,733

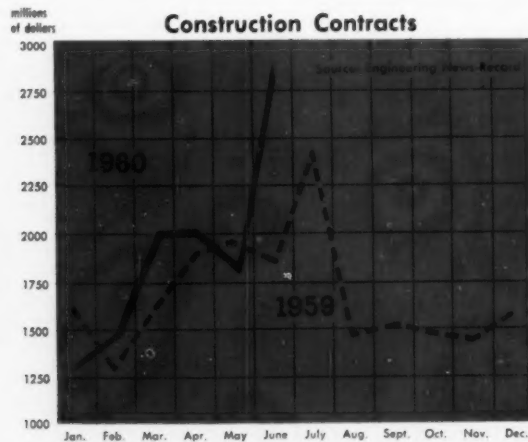
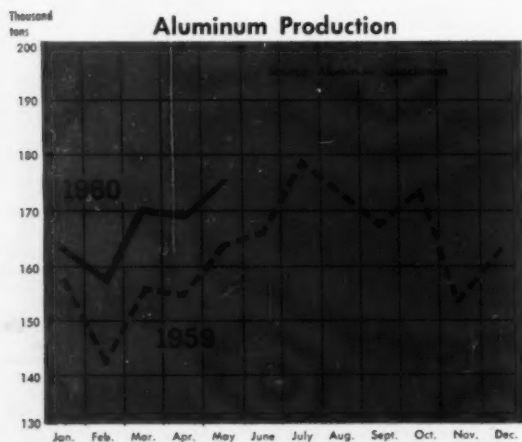
## FOREIGN TRADE INDICATORS (Million dollars)

	<i>Latest Month</i>	<i>Preceding Month</i>	<i>Year Ago</i>	<i>Latest Month</i>	<i>Preceding Month</i>	<i>Year Ago</i>
Chemicals, total	142.5	150.6	130.1	33.3	34.0	28.5
Coal-tar products	11.9	17.5	7.5	6.7	4.4	5.0
Industrial chemicals	25.9	27.8	23.6	9.6	11.2	9.8
Medicinals and pharmaceuticals	24.8	23.9	25.3	2.4	2.3	1.8
Fertilizers and materials	9.4	7.8	8.8	11.6	13.9	9.3
Vegetable oils and fat (inedible)	12.1	11.6	12.9	6.5	8.0	8.7

## Exports

## Imports

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